N.A.A. BULLETIN

November 1957

In Two Sections
Section 1

Some Accounting Aids to Profit

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Appraisal and Control of Capital Outlays

•

Improving Accounting Organization and Staff

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Digest of New N.A.A. Research Report on Accounting for Labor Costs

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Pre-Control for Profit

by RICHARD K. PORTMAN

THE ACCOUNTANT TAKES HIS PLACE in modern business management by devising and administering budget and control programs which help management plan and control profits. With the introduction of cost accounting, and its acceptance by business management, accountants started supplying cost and margin (or profit) data by job, item, customer, territory, etc. This data was helpful to management in its determination of pricing policies, selection of products, customers and territories, and it opened the door for cost reduction. Later, the introduction of budgeting gave business management a better cost control tool than it ever had before.

About this time, managements became dissatisfied with knowing only where they had been and wanted to know where they were going. With the acceptance of forecasting and profit planning techniques, management gained a new control tool which gave indications of changing conditions and trends. It enabled management to make use of budgeting procedures to plan and coordinate research, marketing and production efforts to reach desired profit goals. This paper is devoted to a control activity which merits recognition as the next step in the evolution process. This step is pre-control.

I define control as those activities, tools and communications devoted to the attainment of the planned objectives, although most of us are handling the control aspects of our work much as we treated the actual costing, accounting and reporting a few decades ago. We are reporting after the fact. If control is to meet my definition, it should be exercised in such a manner as to recognize changing conditions and to permit corrective action or modification of plans before or when the conditions change. It should point out variations as they occur or before. Pre-control permits this challenge to be met by advising management as to the probable effects of conditions changes on planned profits.

RICHARD K. PORTMAN is Financial Planning Manager for General Foods Corporation, Carton & Container Division, Battle Creek, Michigan, where he directs Capital Budget, Operating Budget, Profit Planning and Profit Control Programs, and serves as coordinator of Long Range Planning Activities. Mr. Portman is a past President of Kalamazoo Chapter.

ELEMENT AFFECTING PROFIT AND RELATED SOURCES OF INFORMATION

Sales Revenue

1. Sales volume - Sales and backlog reports, industry trends, new customers.
2. Sales prices, terms and conditions - Price lists.
3. Sales mix - Sales and backlog reports and more detail on specific items or customers.

Costs

1. Material purchase costs - Purchasing department, purchase orders, contracts, suppliers' price lists.
2. Labor rates - Personnel department, union contract revisions.
3. Material and labor usage - Daily and weekly statistics compiled by production and cost Departments.
4. Variable overheads (tools, supplies, shipping expense, etc.) - Unusual purchase requisitions, work schedules.
5. Maintenance expenses - Changes in engineering cost estimates and maintenance job schedules.
6. Production volume (where production volume moves contrary to sales volume)* Production schedules, sales and backlog reports.
7. Supervision, clerical and other fixed costs - Personnel changes, work schedules, salary rate revisions, cost control report.
8. Gain or loss on disposal of capital assets - Engineering estimates.
9. Et cetera — Et cetera

*Required only by businesses using absorption costing.

EXHIBIT 1

Fundamentals of Pre-Control

The basic requirements of an effective profit pre-control program are:

1. Organization — The arrangement of skills, personalities and responsibilities. One of the best places to put this work is in the budget department which has the skills, the feeling of management philosophy, and the lines of communication required for this work.
2. Management support — Wholehearted enthusiasm for the program, expressed "from the top down." Since this control cuts across all lines of activity and responsibility in the organization, this management support is necessary for the rapport required throughout the organization.
3. Effective communications — This is composed of two factors. One is free exchange of information between the budget department and all foremen and department heads and between top management, subordinate department heads and the budget department. The other is a report structure and meetings for conveying to the management team an understanding of the probable profit effects of changes in conditions.

Report structure is especially important. It should be informal and flexible and should high-light specific items whenever we encounter them. (Wouldn't

ABC COMPANY - PROFIT ESTIMATE - QUARTER ENDING JUNE 30, 1957. - ISSUED APRIL 19, 1957

Amounts are in thousands Unfavorable variations are in ( )

	PROFIT BEFORE INCOME TAXES					
	AMOUNT		VARIATION FROM PLAN			
	THIS ESTIMATE	PROFIT PLAN	THIS ESTIMATE	LAST ESTIMATE	CHANGE	EXPLANATION OF CHANGE FROM LAST REPORT.
Total	$594	$570	$24	$15	$9	
Prices:						
Customer 1, Product A			5	5	-0-	
Customer 5, Product C			3	-0-	3	Price increase effective 5-1-57
Volumes:						
Customer 1, Product D			22	-0-	22	Orders for May and estimates for June exceed budget by $100,000
Costs:						
Raw material purchase costs			(2)	-0-	(2)	$5.00/ton increase on material "M" 5-1-57
Raw material usage			7	5	2	Reduced scrap on product A
Labor rates			(1)	(1)	-0-	
Labor usage			(10)	-0-	(10)	Special report attached
Overtime premium			(5)	-0-	(5)	Saturday and Sunday production of product D for customer 1
Tools and supplies			4	2	2	Budgeted die purchase deferred
Maintenance			3	3	-0-	
Real estate taxes			1	1	-0-	
Research expense			(3)	-0-	(3)	Research engineer added to staff
	Total		$24	$15	$9	

EXHIBIT 2

it be ridiculous to withhold information from management because the due date for a formal report had not arrived?) Reports should not be issued too frequently. Such reports may be cluttered with unimportant changes such as relatively minor sales volume increases one week, decreases next week, increases again, etc. Furthermore, too frequent reporting creates a condition of immunity to the important thing when it is reported. Reports should be concise and readily understandable to the management group. Frequently they should be accompanied by supplementary data for use in considering specific problems.

But what shall we report on? What, in fact, does affect profits? In short, what are we controlling or pre-controlling? Over-all the only two factors which influence profits are sales revenues and costs. Each is composed of many elements. Exhibit 1 indicates the major sources of information. But this is not all the accountant should know. Much additional worthwhile information can be obtained by attending production scheduling, production staff, sales staff and general staff meetings when revisions to original plans and new plans are discussed. Equipped with complete budgets and profit plans, provided with the information indicated above, and possessing an alert imagination, the accountant can do a good job of advising management people as to where they are headed. Only pre-control achieves this. It is illustrated in the text and exhibits which complete this article.

ABC COMPANY - PROFIT ESTIMATE BY PRODUCTS - QUARTER ENDING JUNE 30, 1957 (ISSUED APRIL 19, 1957)

Amounts are in M $ — Unfavorable variations are in ( ) Profits before taxes

		CONTRIBUTION BY PRODUCTS A	B	C	D	Fixed Costs	Profit
This Estimate		$439	$209	$ 76	$142	$ 432	$ 394
Profit Plan		428	212	75	125	450	370
Variation From Plan		$ 11	$ (3)	$ 1	$ 17	$ (18)	$ 24
Details of Variation							
Sales price	Customer 1	$ 5					
	Customer 5			$ 3			
Sales volume	Customer 1				$ 22		
Variable costs	Raw material purchase			(2)			
	Raw material usage	2	5				
	Labor rates		(1)				
	Labor usage		(10)				
	Overtime premium				(5)		
	Tools & supplies	4					
	Maintenance		3				
Fixed costs	Real estate taxes					$ 1	
	Research expense					(3)	
	Total	$ 11	$ (3)	$ 1	$ 17	$ (2)	$ 24

EXHIBIT 3

Pre-Control Reporting

The development and application of this concept is demonstrated by the following case. The A. B. C. Company produces and sells about two thousand different items to sixty manufacturers who incorporate A. B. C.'s products in theirs. About sixty per cent of the volume goes to six customers. The items fall into 4 product groups, each of which uses similar materials, the same processes, and returns similar profits. Thus, sales, costs, etc. are classified according to major customer and product group. The company uses direct costing and, hence, its profits are not disturbed by fluctuations in finished goods inventory levels. Because sales volumes fluctuate widely from week to week and from month to month but tend to establish relatively stable quarterly patterns, the profit plan is made for quarters only. Further, management has learned how to control profits without using the traditional monthly comparisons of actual results against budget. A quarterly profit estimate, prepared whenever a significant change in prospects occurs is preferred.

Exhibit 2 represents the April 19, 1957 pre-control profit report used. It will be noted that the comments deal only with the changes from the last report. From these, it will be seen that the sales department has prepared and is planning to issue a new price list for Product Group C on May 1. Prices are being increased in line with an already announced increase in raw material costs effective that date. The increases per unit at the budgeted volumes (no change anticipated in volumes of units) give the price increase which, as such, represents profit increase. The unfavorable impact of the material cost increase is shown separately.

There are further matters to point out. Customer No. 1 has increased its

orders for Product D for May delivery and has indicated to the sales department that this high volume will extend through June. Sales, therefore, are expected to exceed budget by $100,000. Since variable costs amount to 78 per cent of sales, this volume increase will increase profit by $22,000. Also, variable and fixed cost changes are itemized according to the importance of the individual changes taking place. Note that the report includes the unfavorable impact of Saturday and Sunday work to meet Customer No. 1's requirement for Product D. Information for this variation was obtained at a production scheduling meeting.

Exhibit 3 supplements Exhibit 2. It provides data by product group, A. B. C.'s basic classification. Under its direct cost system, the company calls the excess of sales over variable costs "contributions to fixed overhead and profit" or "contribution" for short. It might be desirable for others to carry specific departmental fixed overheads (taxes and depreciation on production equipment, production department foremen and clerks, etc.) to product group totals. The company does not do this on its regular statements because the portion of fixed overhead incurred directly for any specific product group is insignificant in comparison with the fixed overhead provided as a common cost for all groups. Such items are given special consideration when determining pricing policy, pricing formulae, etc.

A Specific Problem in Pre-Control

Exhibit 4 is the special report explaining the $10,000 unfavorable labor usage variation on Product B, appearing on Exhibit 2. An explanation of the steps that led to the development of this special report demonstrates the worthwhileness of the company's pre-control program. On April 19 these conditions existed:

1. The company has recently installed two new high-speed low-labor cost machines in one department but is continuing to use some of the old machines until three more new ones are received.
2. This department uses Material X at $200 a ton and Material Y at $100 a ton, the specific material for any job depending on the final product desired.
3. The new machines use a different form of either material than do the old machines.
4. The new machine form of Material X costs $20 per ton less than the old machine form while both forms of Material Y cost the same amount.

ABC COMPANY - PROFIT ESTIMATE - QUARTER ENDING JUNE 30, 1957 (ISSUED APRIL 19, 1957)

Explanation of $10,000 Unfavorable Labor Usage Variation

Our production people have achieved the standard rated speeds on the 2 new machines installed in department 520 when processing Material Y. However, they have been unable to achieve these same speeds when using Material X because the automatic control system does not hold to close tolerances when processing that material at high speeds. If material X is run through these machines at their current effective speeds, our labor costs will exceed budget by $10,000 this quarter.

Two alternatives are open to us:

1. We can avoid this penalty by using the new machines at budgeted labor cost to process Material Y. If we do this we will pay a $40,000 penalty for Material X in old machine form.
2. We can proceed to process Material X through the new machines paying particular attention to the control system in an attempt to reduce the $10,000 labor excess.

The second alternative has been selected.

This profit estimate includes the labor excess on the basis of current speeds. As soon as there is evidence that the speeds are increasing, this variation will be re-evaluated.

EXHIBIT 4

5. The two new machines have capacity to process all of Material X and some of Material Y.
6. These conditions were anticipated in the profit plan.
7. Products requiring Material Y are scheduled through the new machines because they can be processed at anticipated speeds while products requiring Material X are scheduled through the old machines because they cannot yet be processed at the anticipated speeds on the new machines.

The alert accountant compares the $20 per ton purchase cost saving available by running Material X through the new machines with the higher labor cost of running X rather than Y through them. Volumes of items requiring Material X are still estimated at the profit plan level and the $40,000 material cost reduction included in the profit plan for May and June can be obtained if the production schedules are reversed. At current speeds it will cost $10,000 more in labor to process X through the new machines than it will to process Y. Processing costs are the same for both materials on the old machines.

The accountant schedules a meeting with the production manager and the manufacturing manager. The departmental foreman is called into the meeting. The figures are examined and verified at current machine speeds. No one is able to tell when or to what extent new machine speeds can be increased when using Material X, but the manufacturing men all agree to put special emphasis on this improvement. Everyone agrees to stop buying Material X in the old machine form and to start processing all Material X through the new machines by May 1. In this instance awareness of conditions and early recognition of a deviation from the plan saved A. B. C. Company from a significant loss.

Pre-Control is True Control

Early in this paper it was suggested that control must go beyond the point of measuring variations from plan after they have occurred and should pinpoint these variations before they occur. It is obvious that pre-control can be much more valuable than after-the-event-control. The choices of alternative courses of action open to management are broader with pre-control. The example cited here shows how management can be brought up to date with respect to current events and expected coming events. In addition, it indicates how specific problems can be attacked and solved. It is through forward planning and pre-control devices such as these that accountants can help their managements reach the objective of earning a satisfactory profit.

THE CONTROLLER'S PATTERN OF OPPORTUNITY by S. M. DIX

The duties of the controller in industry have been in a state of rapid evolution. The historic development of the clerical, bookkeeping function to the analytical service which controls business in industry and which has led controllers to the top positions in the largest corporations in the land is a subject for book length appraisals.

The controller's job today can be described in terms of the six principal control functions, leaving to the individual corporation interpretation as to the necessary development of these functions as required by refinement of service and available personnel. This very brief analysis should serve some purpose in evaluating the controller's job and the individual controller's opportunity to serve his company.

The record keeping and reporting responsibilities still represent the controller's first line of duty. He is charged with the installation and supervision of all accounting records and with the preparation and interpretation of financial statements and reports. Installation and supervision include the continuous correction and change to accounting systems to maximize the effectiveness of these reporting structures. Reporting systems begin with establishing the chart of accounts. In the final analysis, the reporting responsibility requires knowledge of the entire business if the important accounts and statistics are to be presented in a way that will effect optimum management decision.

The control and internal audit re-

sponsibility entails both accuracy of accounting and surety of coverage. The audit function is continuous. Corporate assets must be identified and personal responsibility delineated. Accounting routines must be established so that each individual who is responsible for company property is subject to automatic check. These automatic checks must be kept alive by periodic testing. Control includes the means by which expenditures are kept within limits established by budgetary appropriations.

The office management responsibility of the controller represents his administrative duties. He is responsible for the organization of accounting personnel, the departmentalization of their work, and the development of working arrangements. He is responsible for the initiation of standard practices relating to all accounting matters and procedures. This entails the coordination of systems throughout the company organization.

Responsibility for representation of all financial considerations as a member of the management team epitomizes the growth of the controller concept in management organization. The controller has become the planner of profits, the interpreter of statistics, the follower of financial details, and the financial adviser to the company head. With the heads of manufacturing, sales and marketing, and engineering and product development, the controller represents modern management.

The responsibility for relationships with government has fallen to the controller. The time consuming details involved in government reports and the financially important decisions relating to tax and other government restrictions have fallen under the controller's accountability.

The responsibility for interpretation of business to labor, to the owners, and to the public is shared with public relations personnel. The large corporations maintain highly specialized staffs to accomplish these purposes. The smaller companies dispense this information through their top executive. The source of information must come from the controller and the organization which he directs.

In summary, the controller has combined the treasurer, the office manager, and the presidential assistant portfolios. In every company his specific responsibilities vary with the capacities of the other members of the top management team, the size of the company, and the relative importance of its financial problems. The functions which we have outlined must be performed by someone in the corporation to some degree. The evolution of management organization has tended to pull these responsibilities together and delegate them to the single manager.

Why Not Capacity Costing?

by R. KENDELL JONES

THE ACCOUNTANT WHO IS MINDFUL of his responsibilities is constantly seeking ways to provide better information to his management. In this paper, the purpose is to take the role of an accountant who wishes to do his part in improving the present absorption costing method being used to apply labor and overhead expenses to product cost. He is looking for ways to eliminate excess standby or unusual costs from inventory value and, by doing so, to have more realistic product costs. Aware that physical facilities have been provided beyond immediate needs, he also wants to provide management with cost data pertaining to them. In quest of knowledge on the subject, he turns to his reading of the many thought-provoking articles written on these matters. He realizes it will provide ideas for study and analysis.

Three Costing Bases—Their Advantages and Disadvantages

In order to properly evaluate the various methods used for absorbing manufacturing expense in product cost and making information available to management, the accountant lists, for the three main bases, their characteristics, advantages and disadvantages:

1. Full absorption costing includes all expenses for activities provided for the benefit of manufacturing. This is the method presently used by the company. Except for an infrequent work center which is totally idle for a large portion of a year, or a department having abnormally low production in order to reduce inventories for changing sales requirements, all expenses are absorbed regardless of the level of production. Its advantages are that only one cost is calculated for each product and management is assured that this cost includes all factors and that the cost of sales and relationship of cost to selling price of individual products is on a conservative basis. Also, except where special studies are needed, no determination has to be made as to which expenses are variable and which are fixed. Its disadvantages are that the cost rates and product costs fluctuate and may require additional analysis in order to explain changes to management. Further, when the cost rates absorb

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R. KENDELL JONES is Head of the Cost Accounting Section of the Upjohn Company, Kalamazoo, Michigan. Mr. Jones is a past President of Kalamazoo Chapter.

EFFECT OF THREE COSTING METHODS AT THREE VOLUMES OF PRODUCTION

Annual volume of production (Annual practical capacity - 625 M Units)

	300,000 M Units	500,000 M Units	625,000 M Units
Expenses			
Variable	$ 147,800	$246,300	$ 307,900
Fixed	185,300	185,300	185,300
Total expenses	$ 333,100	$431,600	$ 493,200

	Expense	Cost per M	Expense	Cost per M	Expense	Cost per M
Direct Costing	$ 147,800	$. 49	$246,300	$. 49	$ 307,900	$. 49
Capacity used	90,000	.30	150,000	.30	185,300	.30
Capacity costing	$237,800	$. 79	$396,300	$. 79	$ 493,200	$. 79
Unused capacity	95,300	.32	35,300	.07	--	--
Full absorption	$333,100	$1.11	$431,600	$. 86	$ 493,200	$. 79

EXHIBIT 1

a significant amount of the expense of unused capacity, wrong decisions may be made as to marketing new products or as to whether a material should be purchased instead of manufactured. It is likewise the case that the excess fixed expenses are capitalized in inventory.

2. Direct costing absorbs only material, direct labor and variable production overhead expenses into product costs. Fixed expenses are considered costs of the period in which they are incurred and are charged off currently to profit and loss. Its advantages, as claimed by its advocates, are that it offers management more useful information, both in the income statement for the effect on profits of volume fluctuations and in operations analysis by eliminating from stated costs elements which produce fluctuating unit cost due to fixed or "uncontrollable" expenses. It is also a point that there is no need for establishing "normal" plant capacity, which may be difficult and time consuming. The method results in a more conservative inventory valuation. Its disadvantages are that direct cost does not furnish the full cost of the product needed for accurate selling price and other determinations. Therefore, it would be necessary to maintain a second product unit cost for selling and profit margin analysis. Also, determination must be made as to which expenses, or portions, are variable and which are fixed.

3. Capacity costing absorbs all variable costs, as in direct costing, plus the portion of fixed expenses which the volume of production utilized bears to the attainable capacity. Its advantages are, first, that it is similar to direct costing as to stabilization of product costs. Further, only one cost is needed for each product. Then, too, inventory is valued at a conservative amount, as all abnormal or unused fixed costs are excluded. The valuation basis is an acceptable accounting practice, while direct costing has not yet received general acceptance. Beyond this, unused or idle capacity is high-lighted for management as to areas and cost. The discernible disadvantage of capacity costing is that a reasonably accurate estimate of the attainable capacity in each area of production is time-consuming and presents many additional problems.

Testing the Capacity Costing Basis

Knowing the importance of having as much information available as possible, both to satisfy his own curiosity as well as to inform management on the subject, the accountant decides to make a study of the effect the three methods would have upon the cost of a thousand units at varying levels of production. The results are shown in Exhibit I. In order to make a further check as to the effect

SIMPLIFIED INCOME STATEMENTS

(Both sales and production at normal volume) (Requiring a factor of 80% capacity)	Under absorption costing		Under capacity costing		Under direct costing
Sales	$1,000		$1,000		$1,000
Cost of goods sold - Variable		$600		$600	
- Fixed		160			
- Total	800	$760	760	$600	600
Gross profit	$ 200		$ 240		
Manufacturing margin					$ 400
Manufacturing fixed costs		$ 40		$200	
Selling and administrative	100	100	140	100	300
Operating profit	$ 100		$ 100		$ 100
Sales at normal, production at one-half normal (Requiring a factor at 40% capacity)					
Sales	$1,000		$1,000		$1,000
Cost of goods sold - variable		$600		$600	
- Fixed		160			
- Total	800	$760	760	$600	600
Gross profit at normal volume	$ 200				
Unabsorbed overhead	100				
Gross profit	$ 100		$240		
Manufacturing margin					400
Manufacturing fixed costs		$120		$200	
Selling and administrative	100	100	220	100	300
Operating profit	0		$ 20		$ 100
Sales at one-half normal, production at normal (Requiring a factor of 80% capacity)					
Sales	500		500		500
Cost of goods sold - Variable		300		300	
- Fixed		80			
- Total	400	380	380	300	300
Gross profit	100		120		
Manufacturing margin					200
Manufacturing fixed costs		40		200	
Selling and administrative	100	100	140	100	300
Operating profit or (loss)	0		(20)		(100)

EXHIBIT 2

upon the income statement, the accountant records the information which can also be used in his presentation to management upon a set of simplified income statements. (Exhibit 2). The accountant now feels that he has enough general material at hand to review the study with his superiors.

We will assume that in the discussion it is decided to include a recommendation that the capacity costing method be given serious consideration as it

PRODUCTION AND PRODUCTION HOURS

Annual normal sales requirements in lots	Product	Lot size	Production centers 1	2	3	4
		M's	Hours per lot	Hours per lot	Hours per lot	Pounds per lot
7	A	500	20	52	17	8,100
10	B	4,000	2	7	2	650
1	C	500	2	4	2	410
20	D	800	4	61	12	5,900
3	E	200	3	13	4	1,680
2	F	150	2	3	2	490
4	Z	1,000	10	20	5	3,000
Annual estimates for sales requirements		500,000 M's	5,500 Hrs.	10,400 Hrs.	3,100 Hrs.	1,530,900 Lbs.
Annual practical capacity estimates		625,000 M's	6,900 Hrs.	13,700 Hrs.	3,700 Hrs.	1,937,600 Lbs.

The annual estimated production volume for sales requirements (500,000 M's) is determined by multiplying the lot size of each product by its annual normal sales requirement in lots.

The annual estimated hours and pounds units for each production center are determined by multiplying the hours (or pounds) per lot of each product by its annual normal sales requirement in lots.

EXHIBIT 3

combines the better features of the full absorption and direct costing methods with very little change to be made in the present accounting system. It would also provide experience in some phases of direct costing, should a decision ever be made to convert to that method. In implementing the decision, the accountant is to proceed with all phases of the capacity costing method, presenting it for final approval after all details have been worked out.

Defining Unused Capacity Cost

The accountant now understands the course upon which he is to proceed, knowing that he has management's backing in this endeavor to create product costs which are more authentic as well as to present better information to management. In considering the labor and overhead charge to the product (or manufactured materials) for only that portion of the cost of production capacity which it utilizes, he knows that a factor of unused capacity expense can be determined for management use. The cost of unused capacity is determined by the following equation:

$$\frac{\text{Practical capacity volume—Actual volume}}{\text{Practical capacity volume}} \times \text{Fixed expense} = \text{Cost of unused capacity}$$

In order to obtain simplification, the accountant follows a management suggestion that the fixed expenses to be applied against the product cost on a

practical capacity volume basis be limited to major items. The items of expense to be considered as fixed can be as few or as many as seems most practical, but it must be kept in mind that the choice finally made must result in obtaining realistic unused capacity and product costs. All other expenses then represent the variable expenses which are absorbed in product cost on the basis of the annual production for normal sales requirements. This keeps the product cost from fluctuating as the result of inventory accumulation or reduction or because of significant changes in physical capacity which are out of proportion to sales requirements.

The next step requires that some definition be made of practical production capacity. Knowing that the plant generally operates on a normal 40-hour week and wishing to consider interruptions in operations, the following definition is decided upon: The practical capacity attainable is based on a 40-hour week with reductions for ordinary repairs and down time and any other factor which, under normal conditions, would reduce the actual hours available for production time. In addition, there is an allowance to provide a margin of capacity for normal growth and seasonal peaks.

In a department manufacturing only one product or products having a common production unit, there is little difficulty in determining the unit factor of practical capacity volume. Where a department manufactures many products which use only certain of the production centers, a unit of practical capacity volume must be determined for each individual production center. This means a cooperative discussion by the production department head, an engineer familiar with the departmental operation and the accountant to determine a satisfactory estimated annual "practical capacity volume figure" for each production center. The requirements for which the major pieces of equipment were originally purchased and past experience of actual production related to its use of the equipment prove helpful in determining an estimate. The number of hours of annual operation is usually the most common unit. It may be that number of lots, dollar value, pounds, gallons or other units of material finished or stored or number of molds or tanks of material are more suitable. After determination of the annual capacity units for each of the production centers, the accountant is ready to proceed with the departmental rate study.

A columnar sheet (Exhibit 3) is prepared and on it is listed each product manufactured in the department to be studied, as well as the unit lot size and the standard hours of production time per lot in each cost center. After securing the annual normal sales requirements for each product, he determines the total productive hours needed for sales requirements and records the annual capacity units beneath them.

WORK SHEET FOR DETERMINATION OF PRODUCTION CENTER RATES

Expenses	Annual Dept. expense	Production centers 1	2	3	4
Variable expenses					
Salaries	$100,000	$40,900	$42,300	$16,800	$--
Supplies	5,600	4,600	1,000	--	--
Repairs	11,100	2,200	8,300	600	--
Total variable expenses	$246,300	$92,100	$101,900	$33,900	$18,400
Annual Est. for sales requirements (hrs. *, lbs. **)		5,500*	10,400*	3,100*	1,530,900**
Variable rate per unit		$ 16.75	$ 9.80	$ 10.95	$ .012
Fixed expenses					
Building occupancy	$ 71,100	$16,000	$27,200	$ 6,500	$21,400
Depreciation of equipment	13,900	2,700	9,200	1,300	700
Property taxes	38,400	400	2,700	200	35,100
Total fixed expenses	$185,300	$30,400	$79,500	$11,500	$63,900
Annual practical capacity est. (hrs. *, lbs. **)		6,900*	13,700*	3,700*	1,937,600**
Fixed rate per unit		$ 4.40	$ 5.80	$ 3.10	$ .033
Final rate per unit		$ 21.15	$ 15.60	$ 14.05	$ .045
Total variable and fixed expenses	$431,600	$122,500	$181,400	$45,400	$82,300

EXHIBIT 4

Each individual expense item and its distribution to the cost centers is then reviewed with the head of the production department being studied. The following factors are considered in establishing the annual amount of each expense necessary for normal sales requirements:

1. Latest annual budgeted expense.
2. Units of production and productive hours to be used.
3. Actual expense for the previous twelve months.
4. Expense estimates from previous study.

From the information reviewed in the discussion, the accountant prepares the work sheet for the determination of labor and overhead rates by production centers. (Exhibit 4). The resulting final rate per unit, which is made up of the variable and fixed components, is applied to the standard hours per lot to determine the labor and overhead charge per lot.

The accountant realizes that the actual unabsorbed expense each month, through the use of the capacity costing method, might principally represent the cost of the capacity not being utilized by the current production volume. However, he is aware that the actual production and expense figures will tend to differ from those used for developing the rates. In order to present a picture which will more closely depict the "unused capacity cost," a means must be devised of determining a monthly "unused capacity credit" for each of the production departments. Not only will this relieve the department head of an unused

expense for which he is not responsible but it also will readily determine a figure which can be used for the presentation of information to management.

Choice of Specific Method for Determining Unused Capacity Cost

Consideration must be given to the deadline for posting the journal entry to the books, so that monthly closing will not be delayed and so that the actual monthly production figures will be available promptly. With these thoughts in mind, the following methods of determining the monthly unused capacity dollar amounts are presented to top accounting management for determination of the method to be used:

1. Throughout the year, for each month, use one-twelfth of the annual amount determined at the time of the current rate study.
2. For the current month, use one-twelfth of the annual amount determined at the time of the current rate study and adjust, where necessary, the previous month on the basis of the actual production unit factors for each individual production center.
3. Determine an overall departmental rate for one (or several) units of production. (Example, number of lots, pounds or gallons of material).
4. Determine an overall departmental rate for one (or several) units of production for the current month and adjust, where necessary, the previous month on the basis of the actual production unit factors for each individual production center.
5. Use the actual production unit factors for each individual production center.

Method 1 provides monthly figures as soon as a rate study is approved. It might change whenever a new rate study is made. This method is simple in determination of the figures but is not representative of the actual monthly conditions or of seasonal variations. Method 2 provides more accurate figures than Method 1, as well as being readily available for monthly closing work. Method 3 is dependent upon the day when the figures for the actual monthly units of production are available. This basis of determining the monthly unused capacity credit might not directly follow the actual production unit factors for each individual production center. The use of Method 4 adjusts these differences in the next month, providing better accuracy. Method 5 is the closest to ideal if the actual production center units are available to meet the deadline in monthly closing.

For the purpose of this paper, the name chosen in discussion with accounting management for the controlling account charged monthly with the total amount

of the unused capacity credits to the production departments is "cost of unused production capacity." Decision must be made whether this element should be shown on financial statements as a reduction of gross profit or as a part of net operating expense. Such a decision is dependent upon the policy in handling similar items and should be discussed with management for final approval. The expense, being brought to management's attention on the financial statement, is supported by a separate monthly report of the departmental current actual and budgeted monthly and year-to-date figures as well as the annual budgeted amounts. (Exhibit 5).

Immediate Mission Accomplished; Ultimate Service Begun

The accountant now knows that he has accomplished what he originally set out to do. He has improved upon the absorption costing method to apply labor and overhead expense to product cost by a simple separation of the expenses and production unit factors into variable and fixed classifications. He has developed a method to obtain more realistic product costs. He has provided, through acceptable practice, a more accurate valuation of inventory costs by excluding unused fixed expense and has arranged to provide management with helpful information of unused facility costs which they have not previously received.

Both he and accounting management know, that with the acceptance of this

BUDGET STATEMENT - COST OF UNUSED PRODUCTION CAPACITY - PERIOD APRIL 1957

Current Month						Year to Date						Annual Budget
	Inc.(Dec.)		% Capacity Unused				Inc.(Dec.)		% Capacity Unused		Capacity Unused	
Actual	Budget	Earnings	Actual	Budget	Description	Actual	Budget	Earnings	Actual	Budget	Amount	%
$ 7,100	$ 5,900	$(1,200)	30	25	Department A	$ 26,600	$ 24,700	$(1,900)	28	26	68,300	24
1,600	1,500	(100)	45	42	B	6,400	6,100	(300)	45	43	18,800	44
2,000	2,100	100	37	38	C	8,500	8,700	200	39	40	24,900	38
400	400	-	20	20	2	1,900	1,800	(100)	24	23	6,000	25
$36,000	$33,000	$(3,000)	34	31	Total Unused	$144,000	$140,000	$(4,000)	34	33	$106,000	32

EXHIBIT 5

plan by factory and administrative management, the accountant's work on it has only begun. This situation will be no different from any other when changes are initiated. It will take time to create refinement and further simplification of the method. Only through patience and experience on the part of the accountant and management can the problems to be encountered be satisfactorily solved.

The accountant, through the part he has played in this study, will have the satisfaction of knowing that he has performed a valuable service to his management and has fulfilled another facet of his never-ending responsibilty to find ways to provide better information to management, reduce costs, and improve the costing methods through simplification.

PERSPECTIVE ON THE FIGURES

We should not underestimate the value and importance of the ratios and efficiency reports derived from a basic set of facts. They are an excellent guide from month to month and serve as warning devices when things go wrong. If used cautiously, they can save many thousands of dollars for an alert plant management, but they do not and cannot tell the whole story. These figures have often been elevated far beyond their true value.

With last month's efficiency rating before them, production people tend to place short-term goals before long-term objectives. They want to improve their rating. This leads to opportunistic striving for a showing. Undue emphasis placed on weekly or monthly efficiency rating figures can result in higher costs due to sporadic material flow, poor scheduling, short-runs and improper maintenance of equipment, inferior quality and a general deterioration in morale.

The accountant is remiss in his duties if he does not recognize and take pains to point out the limited nature and scope of efficency ratings. If he sits in on budget meetings, he should be the first to admit that there is nothing sacred about these figures. He should, if possible, have ready as many interpretative details as he can glean from his records or from conversations with shop personnel which will "breathe life" into his figures.

The accountant, in short, should not attempt to unqualifiedly defend his figures as indicative in all circumstances, but should stand by to aid management in its dilemma. He should be the first to point out that, while "figures don't lie,"—neither do they tell the whole story.

MARTIN R. MARKS

OPPORTUNITIES IN COST ANALYSIS by R. W. Mudge

As the routine details of the accumulation of cost data are adapted to tabulating and computing machines, the cost accounting staff is released to devote more time to the more essential duties of analyzing and forecasting. The cost accountant finds himself constantly striving to develop better—not necessarily more—reports to top management.

Our first step in this program was to initiate a monthly operations analysis letter. The letter is in prose rather than statement form, runs approximately three to four pages, and follows the sequence of the income statement. Such figures as are supplied are comparative to both standard or budget and recent past experience. A summary paragraph reiterates the outstanding factors increasing or decreasing realized net operating profit from anticipated results.

At approximately the middle of the month, a forecast of the income statement for the following month is prepared. This is based on sales forecasts, the production schedule, and trends in price and budget variances. The forecast of operating income is used by the treasurer in the cash forecast.

In comparing current with past experience, we have attempted to state income and costs in a common unit. In our industry (production of mobile homes) lineal foot has been the most useful basis for comparative analysis. Cost and expense per foot might not adequately compare over-all results, because it differs for products of varying lengths. However, it serves to compare costs of products of similar lengths in successive years.

It is the responsibility of the cost accountant to "measure" the inventory against requirements. We are doing this by the use of turnover ratios, and the projection of production schedule requirements. Although the introduction into our operations this year of purchasing schedules developed from production schedules by the use of tabulating equipment has rendered inventory stocks more self-regulating, we believe our reports on them will continue to serve some purpose.

In addition to these short-term analyses, the cost accounting department prepares the annual forecast of income, costs and expense. This forecast is used as the "measuring stick" during the year.

Management has often had to depend almost wholly on discussion of problems. Since we are a medium sized manufacturing plant, this line of communication has run (in the upward direction) from the production supervisor to the vice-president. But, in the past five years, our operations have become more complex and this line of communication has become unwieldy. Management is now turning to the cost accounting department to use its information and statistics to be the "eyes and ears" of management.

Capital Expenditures — Control Today for Profit Tomorrow

by RICHARD L. SMITH

THERE ARE OBVIOUS ADVANTAGES for individual companies in developing and employing controls over capital expenditures. Decisions in this area provide the structure supporting all other operating programs and activities and are a reflection of basic company objectives. The competitive status of a company is largely "frozen into" its investment commitments. They define the market—its content and dimensions. They create its internal cost structure. They defend against excessive wage increases while, at the same time, providing the basic source from which future increases might come. Errors made in this area are frequently crucial. It is always important to the success of a company.

A careful examination of the capital expenditure policies and procedures of generally recognized well managed companies reveals that fewer scientific controls and less skilled analysis has been brought to bear on this function than any other major area of management. Without skilled assistance investment decisions are destined to continue to lead many otherwise promising enterprises into financial difficulty. Many valuable contributions have been made from a variety of sources to aid management in its capital expenditure decisions. To make most effective use of these tools, however, it is necessary to develop an understanding of the relationships among the various issues which bear upon an investment decision.

First, definition of a "philosophy of control" is helpful. Control may be regarded at three different levels—the recording of events, the forecasting or anticipation of events, or the creating or determination of events. In connection with capital expenditures decisions, the most effective basis for services of accountants is related to the third level. To succeed in this capacity they must be willing to turn their backs on many habits, fixed principles, and pretended absolutes which tradition has made respectable. This requires the abandonment of historical determination and allocation of costs and revenues. The frame of

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DR. RICHARD L. SMITH is Chairman of the Industrial Management Department at Brigham Young University, Provo, Utah. During his ten years at this University, he has created and administered a Department of Business Management, and established an off-campus Executive Training Program.

LIST OF PROPOSED CAPITAL INVESTMENT PROJECTS

Proj. No.	Type of investment	Basis for decision	Cost	Annual savings	Useful life	Projected data Return after taxes	Years to pay back
1. Data processing equipment	Replacement	Cost saving	$ 138,000	$ 17,700	25	12%	7.8
2. Acquisition of storage tanks	Expansion	Increased profits	1,320,000	165,000	30	12%	8.0
3. Purchase of R. R. tank cars	Strategic	Mgmt. strategy	262,000	-	-	-	-
4. New chemical mixing process	Replacement	Cost saving	158,000	25,900	10	10%	6.1
5. Purchase of leased space	Replacement or strategic	"	800,000	76,200	40	9%	10.5
6. Introduction of plastics div.	Strategic or expansion	Increased profits	1,100,000	112,200	20	8%	9.8
7. Improvement of power facilities	Replacement	Cost saving	760,000	116,900	10	8%	6.7
8. Purchase of Co. to handle for. oper.	Strategic	Mgmt. strategy	530,000	-	-	-	-
9. Improved office layout	Replacement	Cost saving	130,000	102,400	25	6%	12.7
10. Purchase of office bldg.	Expansion	Increased profits	1,200,000	55,800	50	4%	21.5
TOTALS			$6,398,000	$672,100			

EXHIBIT 1

reference must be directed forward into alternatives for future action. A second useful concept for effective capital investment decisions is the recognition and definition of several key control points. The major portion of this article is directed to the second aspect of the problem and consideration is now given to several basic control points at which critical aspects of investment decisions may be analyzed. To facilitate the clarity of presentation a basic, quasi-fictitious illustration accompanies the text.

Control Point No. 1: Search for Investment Opportunities

Control relies upon a continuing search for profitable investment opportunities, for no investment decision can be made without alternatives to compare, and once any type of investment decision is made, the nature of the available alternatives change. Investment opportunities may typically be discovered by:

1. Audit of the economic effectiveness of existing facilities.
2. Industrial engineering studies of the technology of the operation or function.
3. Comparison of known competitive methods and facilities.
4. Maintaining contact with salesmen of alternative resources.
5. Stimulation of the organization at all levels to think creatively.
6. Conducting organized research.

The importance of this area of control cannot be over-emphasized. Regardless of the refinements in analytical techniques brought to bear on any specific investment decision, the significance of the decision is dependent upon the

quality of the alternatives proposed. For example, a steel company was considering whether or not to invest in an automatic cutting device in a billet rolling operation as a means of reducing waste. In spite of the rather substantial savings prophesied by the operating management, the research department was opposed because a technique was being perfected in a prior stage of processing that would eliminate the problem entirely. Effective decisions in this area can be secured only when measured against all reasonable alternatives.

The search for investment opportunities will produce projects which may be usefully classified in recognized categories. Replacement investments may be considered first. These include both like-for-like and obsolescence replacements and the basis for decision-making is prospective cost savings. Item 4 on Exhibit 1 is an example of this. The pivotal comparison is between the future costs of the old equipment and the future costs of the new. The particular difficulties connected with the analysis of future costs in replacement decisions involve the determination of the future capital wastage costs. For existing equipment, this involves the future decline in disposal value. The original cost of the old facility is sunk, irrecoverable, and totally irrelevant. The depreciation charges shown on the books are similarly independent of the company's real future costs. These bookkeeping values, though useful for income measurement, have no significance for the replacement decision. The capital wastage cost for the new machine over its lifetime is its prospective acquisiton cost, less ultimate resale value. Since the investment commitment has not yet been made this total decline in value is relevant for the decision. The hard problem is to estimate the probable economic life of the new equipment. This decision lies at the heart of the investment decision and will be dealt with later.

The second major category of investment types is that of expansion investments involving plant enlargement and the invasion of new markets. Item 2 on Exhibit 1 is an example of this. Again a comparison of alternatives is essential. In this case the alternatives are between doing the job and not doing it. Consequently, the basis for the investment decision is not the cost saving, as before, but the expected addition to profits by making the investment as opposed to not making it. This added profit can be guessed at by projecting an income statement that shows both the added revenues and the added costs over the life of the investment. It will be noted that the degree of uncertainty involved in this type of investment is much greater than in a replacement decision.

Product investments, the third category, are of two main types: Improvements of existing products and additions of new products. Strategic considerations in capital budgeting may dominate this type of decision. A first-line competitor

SUMMARY OF "ECONOMIC WORTH" CALCULATION FOR PROJECT NO. 4

Annual Costs	Pres. Meth.	Prop. Meth.	Difference
1. Labor costs	$96,320	$ 68,420	$27,900
2. Supervision	7,640	7,640	-0-
3. Power	98,340	92,000	6,340
4. Waste	6,300	2,400	3,900
5. Repairs and maintenance	3,200	2,800	400
Total	$211,800	$173,260	$38,540
6. Income taxes:			
Operating cost saving (as above)		$ 38,540	
Less: Added depreciation resulting from adoption of new process (Cost 158,360/12 years)		13,200	
Increase in taxable income		$ 25,340	
Increase in income taxes (at 50% rate)			12,670
7. Net annual savings			$25,870
8. Pay-Back cost ($158,360) - Net Annual Savings ($25,870)			6.1 years

9. Annual rate of return:*

If useful life is	Return is approx.	If required return is	Useful life must be at least
8 years	6.5%	6%	8 years
12 years	12.4%	10%	10 years
16 years	14.5%	15%	15 years
20 years	15.5%	16%	25 years
		18%	over 50 years

* Based on the formula for present value of an annuity $= \frac{1-(1-i)^{-u}}{i}$

Thus: $158,360 - 25,870 \left(\frac{1-(1-i)^{8}}{i}\right)$ or $\frac{6.1 - 1 - (1.065)^{8}}{.065}$

EXHIBIT 2

is usually under strong compulsion to make whatever investments are required for defensive improvements and failure to keep abreast of rivals can cause deterioration of the market share. The return on such investments must be based on increased profits but, because no historical basis for projection exists, such profits are hard to quantify. The combination of big-error margins and strategy considerations often makes the judgment of the high command the determining consideration.

A final category of investment types, to be mentioned only briefly, is that type which is imposed upon the company by law or economic necessity, such as a washed out trestle of a railroad, or by executive judgment where the benefits are so diffused and delayed that strenuous efforts to measure profitability are unproductive. Such investments cannot be subjected to the rate of return competition of other projects and must, therefore, be protected by large margin of error allowances or by direct intervention of top management in the decision.

Control Point No. 2: Evaluation of Projects

The next key control point is the determination of the economic worth of each project. This involves the ranking of each in a ladder of economic desirability. A variety of techniques are being sponsored to serve this function

but, typically, they rely heavily upon a calculated rate of return on investment. The first stage in this ranking process involves the collection and analysis of the relevant data. The usual starting point is the determination of the annual cost savings or dollar profit improvement (depending upon the type of project under consideration) afforded by the new equipment in comparison with status quo. Exhibit 2 shows, in summary form, the results of such an effort in connection with project 4 on the list. These points should be noted:

1. The alternatives for accomplishing a specfic purpose whether there be many or few should be arranged in order of investment amount, starting with the one that requires the smallest investment committment (in our example, the present method, which requires no investment) and working up step-by-step to the alternative entailing the greatest outlay. (Our example has only one alternative and thus only one set of calculations).
2. Future cost differences only are considered. The decisions are always between alternatives and only the differences are pertinent. Profit projections must be based on estimates of future prices, future costs, etc.
3. Comparisons are made between the least costly alternatives first and the one showing the greatest rate of return is challenged successively by the alternatives requiring higher cost committments. The principle which should be followed is that the company should climb the ladder of investment alternatives only to the point at which the added earnings or savings over the next lower acceptable alternative will produce an "adequate" return on the added investment.
4. Accounting data must frequently be modified to serve in these analyses. What is wanted is the determination of how costs and income will be affected by the adoption of the proposal under consideration. This data is not always evident in historical, allocation-type accounting reports. For example, direct labor costs are saved only if a worker can be taken from the payroll or used productively elsewhere. Again, savings in overhead costs should not be calculated by applying an overhead percentage rate to the direct labor savings. Only those incremental overhead cost factors affected by the replacement should be considered. Also depreciation rates should not be considered in determining cost savings since, in the case of old facilities, only future costs are pertinent and in the case of the challenger to the old method, the capital cost is considered in connection with the rate of return calculation.
5. Recognition should be given to the time value of money and to the timetable of prospective future receipts and disbursements. When the economic life of assets is short or fairly uniform, when earnings estimates are necessarily rough, and when uncertainty rises steeply in the distant future, this refinement is not worth the effort. In other circumstances, however, and when the firm's cost of capital is high, discounting

the future cash flows is essential to accurate determination of the best alternative courses of action.

6. A decision must be made regarding the method of relating prospective cost savings or earnings to the investment needed to secure them. Two basic approaches stand out, payback and rate of return. To these approaches, we must now give specific attention.

Pay-Back and Rate of Return as Evaluation Bases

Pay-back is the most popular method but is of questionable value. In our illustration of the new chemical mixing process, it will be noted that, if the estimates are accurate, the savings by adopting the new process will pay for its cost in a little over six years. The critical decision, therefore, is to determine whether the economic life of the facility will exceed six years (if so, the benefits will more than recover the cost) and whether the benefits available after capital recovery will be greater or less than those obtainable from other uses of the money. Note certain characteristics of this judgment. The $158,000 cost will occur immediately, whereas the returns will be spread over six years. Consequently, the value of the $25,000 annual saving anticipated six years hence is not equivalent to the same amount spent now. Thus, the payback method is of limited usefulness where the period of payback is relatively long. Then, too, because the rate of return on the investment is not known, the overall value of each project cannot be ranked with other projects. Note in our illustration, for example, that project 4 shows a payback of six years whereas project 1 with a higher rate of return shows an even longer payback (7.8 years). The real contribution of the payback approach is made when two conditions dominate the capital expenditure decision, a tight cash position requiring a rapid replenishment of working capital from investment projects and a rapid rate of technological change where short pay-off periods are needed as a screening for obsolescence.

A second major approach establishes rate of return. It relates project cost savings to the investment by converting the anticipated annual stream of cost savings or earnings to a present value by an appropriate discounting for the time value of money. A slight modification of this approach is to determine from interest tables the rate of interest required on the series of future benefits to produce a present value of the benefits equal to the cost of the investment. Within the past year or two, a number of techniques have been designed and published which permit these basic conclusions to be drawn either by observation on a graph or by comparing the appropriate figures appearing in forms

designed for ease in calculation. From Exhibit 2 it will be noted that, for project 4, an estimated economic life of the investment of 10 years would yield approximately a 10 per cent rate of return. This rate is the amount which will be found in Exhibit 1 in the ranking of the projects according to rate of return. The following benefits are derived from this approach: the overall profitability of each investment project can be compared with all other alternatives and rejection rates of return can be compared with the anticipated rates to screen out undesirable projects.

Application of Rate-of-Return Appraisal Basis

Two vital decisions are needed in use of rate of return. An estimate of the economic life of the proposed project and a determination of the required earnings rate or the rejection rate.

There are at least three ways for defining the "life" of a facility: its physical life, its technological life, and its product market life. The economic life is the shortest of these three. Physical life is of little use in investment decisions, although it is frequently used for accounting reports and tax calculations. Technological life, referring to the period of time that elapses before a new facility comes out that makes the present facility obsolete, in most situations corresponds to economic life. Unless special information is available, the period estimated can be little more than a guess. Yet it is a guess that must be made, for the investment in the machine will cease to earn a return when and if this facility is replaced by an even better one. Some techniques have been devised (notably the MAPI formula of George Terborgh and one or two others) to establish a more objective basis for determining the influence of obsolescence on the rate of return. The product-market life concept can best be appreciated by reference to a new machine developed to make buggy whips. Such a machine cannot make a return on its investment even if its physical and technological life exceeds a hundred years.

The rationing of scarce capital among various projects required not only a ranking of the projects according to profitability, but also a rejection standard to separate projects that are not sufficiently profitable to merit funds, from those that are. Basically, the cut-off rate is tied to the long-run average cost of capital to the firm. This may be modified in the short run by such factors as a temporary dearth of funds, speculation on changes in prices, anticipation of a worsening of the economic outlook, allowance for margin of errors in the rate of return estimates of proposed projects, and others. Still, the cost to the present stockholders of the capital used for investment purposes is the dominant influ-

SUMMARY OF "COST OF CAPITAL" CALCULATIONS

I. Cost factors of various sources of financing:

A. Fixed debt -- Weighted average interest rate of term loans and bonds	3%
B. Net market price anticipated for 4 1/2% preferred stocks	$100
C. Net market price anticipated for common stocks with a 6.7 price-earnings ratio and $2.50 per share dividend rate	$41

II. The present capital structure of the company:

	(thousands)
A. Fixed debt	$12,000
B. Preferred stock -- $100 par	3,600
C. Common stock -- 600,000 shares	14,400
D. Retained earnings	7,200
Total	$37,200

III. Calculation of the average cost of capital to maintain the same proportionate capital structure:

Type of capital	Amount (thousands)	Proportion of total	After tax cost*	Weighted aver. cost
Fixed debt	$12,000	32%	1.5%	.48
Preferred stock	3,600	10%	4.5%	.45
Common stock	14,400	39%	14.9%**	5.81
Retained earnings	7,200	19%	14.9%***	2.83
Total	$37,200	100%		9.57%

* Tax rate of 50%

** Cost of financing by common stock may be determined by dividing 100 by the price-earnings ratio of 6.7. This assumes that stockholders by holding stock worth $41 per share are enjoying the benefits of earnings by the company of $6.12 per share or 14.9% of their current investment.

*** Cost of financing by retained earnings is identical to that of Common stock since the method is equivalant to the enforced reinvestment by present stockholders into additional shares of new common.

EXHIBIT 3

ence. Capital may be secured internally by retaining earnings or by depreciation provisions. The cost to stockholders of using either of these sources is identical. External sources of capital include trade credit, short and long-term borrowing, and sale of debt and equity securities. To determine the cost of such capital, two steps are required: finding the net market value or interest rates on the financing instruments and determining the desired capital structure of the firm. Reference to Exhibit 3 will illustrate this process. The following points should be noted:

1. If earning rates on projects are after-tax rates, then cost of capital should be after tax costs.
2. The cost of common stock is determined by the market value related to

earnings. Some argument might support the use of dividends instead of earnings, but this choice depends on whether you feel that earnings or dividends are the more influential in determining the market price of stock.

3. Retained earnings or surplus is just as costly to existing stockholders as if they were to receive those earnings in dividend distributions and then re-invest them in additional stock.
4. The marginal cost of raising new capital, in the illustration, is 1.5% (the cheapest source) whereas the most conservative source of financing will cost 15%. If it is considered desirable to maintain the approximate existing capital structure after the new financing, then the average cost should be used or 9.6 per cent.

If the average cost of capital is adopted as the rejection rate, comparison may now be made between rates of return on investment proposals and the rejection rate. This rejection rate will insure that the position of present stockholders will not be injured by a dilution of the company's future earning power. A rejection rate somewhat higher than cost of capital is usually desirable to provide a cushion for capital expenditures which produce no earnings and allowances for the risk of individual projects which are generally greater than the average hazards of the enterprise as a whole. The cost of capital, in addition to being the basis for a rejection rate, can also be used as a bench mark for appraising return expectancies for the future budgeting program. Once more it should be emphasized that the rejection rate cannot be the sole basis for an investment decision.

Applying the rejection rate of approximately 10 per cent from our illustration to the project list in Exhibit 1, it will be noted that projects 1, 2, and 4 seem feasible, requiring a total capital budget of $1,616,000. It should be noted that the 10 per cent rejection rate should be applied to each project individually and not to the cumulative average return available after adding each additional project.

Supplementary Control Points

At least three additional control points are vital in any capital expenditure program. They will be mentioned below:

1. Comparisons should be made between the actual cash outlays and the authorizations. This control is needed to keep the estimates of the amount of investment honest and accurate.
2. A post-completion audit of earnings of the project compared with the earnings forecast is also needed.
3. All of the controls need to be implemented by specialized forms, procedures and authorizations.

In conclusion, it should be repeated that capital expenditures are vital to the stability and the growth of our economy. Sound controls over these expenditures are becoming essential elements for individual company success and top management needs technical help to function successfully in this area.

THE ACCOUNTANT AND PUBLIC RELATIONS

by Jo Chapman

The cost accountant in his full role as an advisor to the policy-making function of a company, is in a position to encourage his company to really give serious thought as to how much financial information can be given to employees, unions, and stockholders without endangering the company's competitive position in its industry.

As an example, perhaps one of the least understood items on a financial statement is "depreciation" or "depreciation reserves." Sometimes the lesser informed union official may look upon a depreciation reserve as an item which he figures is a "salt box" in which the company is secreting profits. A stockholder who is impatient to get bigger dividends might also figure that a depreciation reserve is keeping his earnings on his investment lower than they should be.

Depreciation is but one of many financial statistics on the accountant's desk which may offer public relations material potentials. What about insurance costs —for the protection of the employee, for the preservation of assets which plant and equipment represent and those represented by the knowledge and skills of top executives or researchers? Other financial data such as workmen's compensation, pension plans, unemployment insurance, hospitalization, etc., are all the result of employment and are really cousins of the weekly or monthly pay check. Income taxes, excise taxes, property taxes, etc., are all a part of the company's cost of doing business. Why not put the facts forward?

Accountants may well carry their service beyond the confines of the budgeting, record keeping, economic analysis activities of their individual companies. There is no doubt in my mind that the most valuable source material for better public relations will come from the accountant's desk. However, it can only become available to the company publicists if the accountant, himself, applies his imagination to the task of making statistics tell a story as well as giving the financial picture.

Digest of N.A.A. Research Report

Accounting for Labor Costs and Labor-Related Costs

Presented below is a digest of findings in the N.A.A. Research Study dealing with accounting for labor and labor-related costs. Members of the Association who wish a copy of the full report may obtain one copy without charge on request to the National Headquarters Office. A convenient order card will be mailed to you in a few days for this purpose. Copies of the report are also available to non-members at $2.00 each. Members may obtain additional copies at the same price.

CHANGES in conditions under which labor is employed and the growing importance of supplementary costs, directly and indirectly related to the presence of employees, have raised a variety of new problems in accounting for labor costs.

In making decisions with respect to the future, management often needs to know what effect a proposed change may be expected to have on costs. For example, what will be the full cost of increases in wages and fringe benefits and of changes in contract terms asked by the union? What will be the cost of proposed changes in company policy regarding working conditions, vacations, pensions, etc.? Such questions arise frequently in practically every company. All too often, the answers needed are not readily available. Moreover, figures prepared for the purpose often do not present an accurate, all-inclusive cost of the proposed changes.

In recent years, pressure for increased production at lower unit costs has accelerated the trend toward equipment that is more automatic and less dependent upon manual handling of materials. This trend is particularly marked in a number of industries previously characterized by employee-paced operations. The resulting changes in the manner in which the labor force is utilized often call for changes in methods of accounting for labor costs. Effective cost control and

profitable pricing of products both rest upon current and reliable cost data.

The steady growth in so-called fringe benefits is well known. There are, in addition to benefits received directly by employees, a growing number of other costs entailed by the presence of employees. While the literature dealing with operation of the various employee benefits is voluminous, very little has been written about methods of accounting for costs of these benefits.

In view of the circumstances described above, the National Association of Accountants initiated this study to reexamine practices in accounting for labor costs, with emphasis upon labor-related costs. In the study, attention is given to definition and classification of labor costs and of labor-related costs, to methods for incorporating such costs into cost of products, and to reporting techniques designed to communicate to management the full amount and significance of labor costs. This report, presenting findings in the study, is based largely upon practices of forty-eight companies selected to provide a cross-section of the different types of manufacturing industry. In addition to a summary of practice, the report includes generalizations drawn from practice and suggested procedures for the possible improvement of current practice.

Chapter I outlines the increasing importance of labor-related costs. Attention is called to the lack of uniformity in understanding of what constitutes labor-related cost. The report shows that this lack of uniformity is also present in the labor cost base used in deriving ratios between labor cost and labor-related costs. To reduce these differences in definition and statistical presentation, suggested definitions are given for labor-related costs and the labor cost basis which seems most appropriate for computing ratios to be used by management.

Chapter II shows the effect that increased use of automatic production equipment has had in changing the nature of the labor force. From the accountant's point of view, wider use of production center manning crews and cost center control rather than individual operation control of labor cost is important. Study of company practice shows that the accountant needs to recognize these changes and to adjust account classifications and cost control practices to cope with such changes.

Chapter III develops new definitions for labor cost classifications. The need for these definitions seems to be evident from the changes which have occurred in the nature and utilization of the labor force in many of the companies participating in this study. Definitions in textbooks are often based upon older manufacturing practices and, as a consequence, these definitions are not always adequate today.

Chapter IV presents a listing of 78 separate labor-related costs disclosed by the

field study. These costs are classified to show to what extent they are occasioned by and apply to hourly and salaried employees. Analysis of these costs shows that the great majority are related to either payroll dollars or the number of employees. A third group of labor-related costs is not related either to payroll or to number of employees.

Chapter V discusses accounting procedures for distribution of individual manufacturing labor costs and product costing. Allocation practices currently being used by companies participating in the study are presented.

Chapter VI continues the presentation of accounting procedures for labor and labor-related costs. Attention is given to classification of labor contract negotiation costs, strike costs, variances from standard costs, and other items.

Chapter VII shows that company practice varies widely in the completeness and clearness with which labor-related costs are reported to management. A suggested manufacturing cost report form and a supplementary report on labor-related costs are presented to give management a clearer picture of what these costs are as compared to other costs.

Chapter VIII discusses the problem of determining and reporting to management the cost of proposed increases and changes in labor-related costs. Both amounts of such costs and their impact on the total manufacturing cost picture are considered. A suggested procedure and report form are outlined for possible improvement of practice in computing and presenting the effect of changes in any of these cost items.

EXPANDING ROLE OF THE ACCOUNTANT

by ROBERT C. RILEY

The accountant of today may choose one of three endeavors: analysis, verification, or procedure. All three are *thinking* fields and when this accountant of today becomes the accountant of tomorrow, he will be a dynamic component of management. Not only is cost analysis laid on his doorstep but many specialized tasks as well. These include effects of mergers and consolications, technical knowledge and accurate analysis of costs under procurement contracts, utility rate controversies, in labor wage disputes, and in many other areas where the accountant is especially qualified because of the breadth of his experience derived from a diversity of transactions in a variety of business situations. The future holds enough challenges to tax the best brains of all who enter the field.

There are also professional challenges. Many new problems are constantly cropping up for solution by the accountant and challenging his ingenuity. Opinions differ and accountants disagree. Unlike lawyers, accountants are not the interpreters of existing rules but must formulate their own. Accounting is not a static thing, and, therefore, the accounting principles evolved down through the years will continue to be fashioned by current business requirements and must be flexible. An example is found in problems posed by cost aspects of pension plans. Another concerns advocacy of depreciation on replacement cost. Matters like these require a broader background than accounting knowledge only. They call being versed in taxes, etc.

However, the accountant's work customarily comes to a head in the preparation of analyses. These analyses do not usually indicate what steps should be taken to correct adverse disclosures. This is left to the experts in other departments. The accountant of tomorrow is going to go one step farther in his impartial approach. With all the facts at hand in the accounting records and with his wide knowledge in the business world, he is going to put his finger on the trouble and suggest appropriate action. Often the accountant is in a better position to do this job than the specialists of other fields. Too often the salesman knows only selling, the engineer only engineering, and the operator only his machines and none of them takes the trouble to sit back and see clearly the overall effects of what they are doing. That is what the accountant of tomorrow must do.

The present-day accountant is no longer simply a man of figures, expert in certain calculations, adept in finding mistakes in trial balances, and skilled in detecting an erring cashier. He is a man of wide knowledge and experience in business affairs who is qualified to interpret the meaning of statements and he is looked to for advice in matters of policy and administration. The role of the accountant, here portrayed, presents a real challenge to all educators to train the type of men needed to fit that role. Educators can make a substantial contribution in readying students so that they may step from the shoes of the accountant of the past to the seven-league boots of the accountant of tomorrow.

The Counterpart Accounting Organization — An Adventure in Service to Management

by J. P. BLAIR

THE DIVERSIFICATION BY MANY COMPANIES of their product lines, has put it squarely up to the accountant to either change his organization structure or to go back to the isolated high stool and the green eye-shade. Large companies with either integrated or diversified product lines have been inclined to separate their product lines and in some cases even individual components of integrated product lines, into independent units. One advantage in doing this is that it facilitates the assignment of personnel who are experts in the product line or the operating functions being performed by the group. The accounting function simply operates for the benefit of each group, with resulting efficiency from combining tasks of a clerical nature for mass production. But medium-sized companies cannot always break up their operations, because individual product lines are not always large enough to carry a full complement of organization overhead. In many such instances, where the accounting organization continues unchanged, in spite of the diversification, three major problems emerge, although each is not always recognized promptly. These problems are:

1. Poor communication with personnel in charge of processing or marketing operations—Accounting information for each operating line comes from several accounting groups. Hence no one individual can serve as a contact point for marketing personnel or plant operators. A further weakness is that the accounting responsibility for each operating line is divided among several accounting groups. Also, because each accounting group performs relatively restricted functions for many product lines, each different, there is a tremendous lack of understanding of operations on the part of the accountants.
2. Lack of sense of participation on the part of accountants—The accounting departments, isolated by inadequate communication and incomplete knowledge of plant or marketing operations, tend to consider accounting as an end in itself, for there is no way to

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J. P. BLAIR is Controller of Consumers Cooperative Association, Kansas City, Missouri. He has been associated with this company since 1944. Mr. Blair was previously associated with National Refining Company in Cleveland, Ohio, and Coffeyville, Kansas.

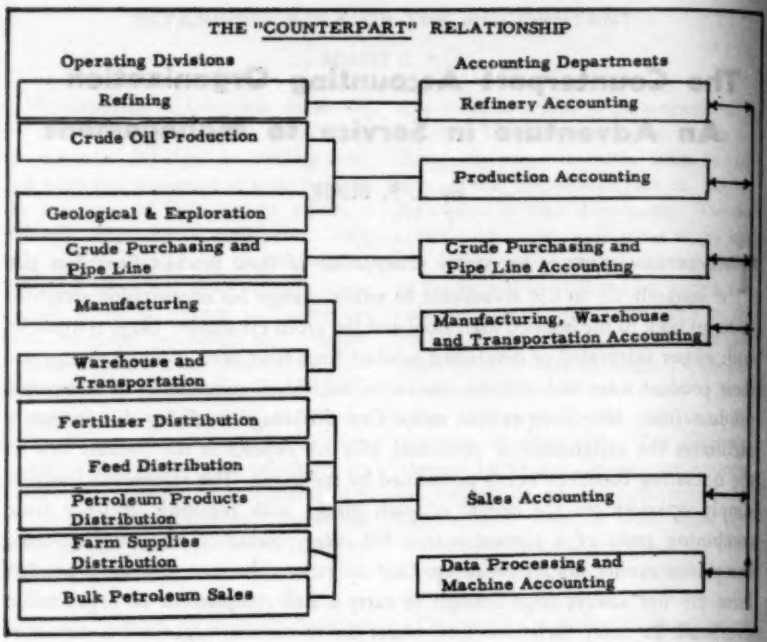


EXHIBIT 1

train accountants to understand management's problems for an entire line of products or all lines of products. No individual accountant can be exposed to a product line in its entirety within a reasonable period of time. This isolation and lack of training make it impossible for the accountant to "participate" in managerial decisions and deprive him of any feeling of "proprietorship."

3. Lack of respect between accounting and operating groups—Not understanding each other, the accounting and operating groups tend to be suspicious of each other and a climate for mutual respect is lacking. The accounting group, unable to talk the operator's language in each operating line, can neither understand nor appreciate the operating problems and, through a defense mechanism, considers many of these problems as ridiculous or beyond the scope of its attention. Rather than to disclose the extent of ignorance of operations, accounting groups surround themselves with an "impenetrable wall" taking the position that their province is accounting only, that operating and engineering problems have no part in their work.

Isolating the Obstacles to More Effective Accounting Units

As a medium-size organization, we encountered these problems. As we expanded our lines of products, it was apparent that they were serious. The high cost of accounting in today's economy was not producing results or training manpower to the extent required to get maximum usefulness from dollars spent. We recognized that much improvement could result from organization of accounting staff groups, so that each could be relatively independent and responsible for one or more allied operating or marketing functions or product lines. However, before we could adopt this approach, we had to overcome three difficulties which exist where separate accounting organizations are established for individual operating functions. These are as follows:

1. Accounting costs are higher for completely self-contained groups if similar clerical work exists in most of these groups.
2. High quality personnel are required at higher salaries than would be required under the conventional organization structure. Accountants have to be hired who can also learn operating facts to the extent necessary to interpret those operations in terms of accounting data.
3. A responsibility beyond limited accounting functions and the presentation of routine accounting reports is imposed upon supervisors in such an accounting organization.

It was our feeling that the first and second problems could be worked out economically by maximizing efficiency of the operation and by selective hiring and/or training of employees. We also felt that there would be many non-monetary compensations for the employees as a result of the added responsibilities and that a sense of participation would be forthcoming which would actually make the jobs more enjoyable and "respectable." This left us with the single problem of higher accounting cost, of having several accounting groups instead of one.

Overcoming the Obstacles

Our first step was to both open and shorten lines of communication between accounting and operating personnel. We started by establishing a separate accounting department for each operating division of the association, i.e., a refinery accounting department to correspond to the refinery operating divisions, etc. A complete segregation of all of the accounting tasks for each of these operating divisions was made. Where it was possible, because of similarity in

operating divisions, some combining was done to a limited extent in order not to develop accounting departments with insufficient tasks. Exhibit 1 illustrates specific operating-accounting relationships.

The next step was to decide the extent to which each department should be autonomous. We chose to develop a common chart of accounts to the extent practical in order to expedite more accurate and meaningful consolidated financial statements and operating statistical reports. Wherever necessary, we crossed corporate (subsidiary) lines in order to provide a common chart. It was complemented by a complete manual of accounts with a description of the use and contents of each account for each department. Great care was taken, in developing this complex chart, so that dissimilar items could not possibly be brought together improperly, in order to eliminate problems of consolidation. All analytical coding of a cost accounting nature below the level of the financial accounting codes was left to the discretion of the individual departments, to be developed with operating personnel on a basis most useful to those divisions.

We reviewed our machine accounting applications (and are still doing this on a continuing basis) in order to utilize our accounting machines on jobs having the greatest potential payoff in terms of lowered labor costs and added information. Applications of doubtful economic value were not placed on the accounting machines and all applications were integrated for as much continuity and as little cross-flow of paper work between the machine accounting and accounting departments as possible.

We decided against establishing a separate department for clerical data processing but, instead, combined it with machine accounting, because this lends itself to more efficient machine accounting operations. It is to the advantage and credit of the machine accounting department manager to reduce his costs by decreasing manual clerical operations and increasing machine accounting operations, with a consequent reduction in over-all accounting costs. Again to the extent possible, we stripped, from each of the departments which were *counterparts* of similar operating divisions, all clerical jobs which could be similarly grouped. These were consolidated (with some savings in manpower) in the combined data processing and machine accounting department.

These steps left us with several relatively small accounting departments, each of which is a counterpart of one of our operating divisions or of several operating divisions in the event that there was enough similarity to group. Each of the accounting managers was freed of the necessity for supervising large numbers of clerical employees on a day-to-day basis. The organization is flexible and each accounting department contains specialists who operate in a field sufficiently narrow so that they can, through exposure and application,

become experts in the field, even understanding a portion of the technical operations involved. Each accounting department manager has continual contact directly with the operating division for whose operations he is accounting. It is not necessary for him to clear every contact through his superiors, although it is his responsibility to continually keep them informed, either through copies of memoranda or direct oral contact. This direct communication is the essence of the "counterpart" system.

"Feed-Back" of the System

To substantiate the favorable results, we took a look to see if what we had done did solve the problems which had been inherent in the conventional accounting organization. Each operating head is now taking all of his problems of an accounting nature and all of his requests for information to his accounting counterpart. The line of communication is short and open at all times. Field accounting is constantly under close scrutiny by the accounting department managers who have functional authority over the field accounting. Trips to the field are used to complete the education of as many employees as is economically possible. Addditionally, accounting department managers were made aware of the necessity for learning enough about the operations to talk intelligently with the operating people and understand their problems and even anticipate them. This had not been previously possible under the old type accounting organization.

Previously the individual accounting department managers had in some instances been limited to the accounting function for which they were responsible. At best, this left the feeling that accounting was an end in itself. At its worst, it produced unimaginative individuals repeating by rote the same job over and over again without ever understanding the real meaning of the data being produced. In the development of the analytical or cost coding which is subordinate to the financial account coding and independent of central control, common interests with the operating divisions were quickly disclosed. Maintenance material on the financial statements might include the cost of contract labor for removing weeds from a field yard, the cost of re-working an oil well, the cost of overhauling a typewriter, etc. As maintenance material, the items which were included were not understood at the foreman level. When reclassified as well re-working or as pump overhauling, they immediately became meaningful to the foreman and he realized the cost of each operation for which he is responsible. Additionally, and much to our surprise, the requirements of the operating people for a breakdown on a basis useful to them did not result in such a long list as to be impractical.

Through their work with the operating division managers, the accounting department managers gained such familiarity with operations that it was not long until operating groups were asking for assistance in the preparation of profitabilities covering changes in existing facilities or additions. Because assistance from the accounting department managers and their people resulted in some improvement in the basis of presentation and because it showed management that such items had been developed jointly with the accounting groups, there was a mutual benefit to the operating group, to the accounting group and to management.

Because they are not required to continually supervise large numbers of clerical employees, the individual accounting department managers and their assistants are able to interpret and analyze information from their reports. As a result, data showing trouble spots or places where improvement might be needed are brought to light and referred through the direct line of communications to the operating division head. Although these can be routed through channels to management and then back down again to the operating divisions, this is seldom done. Instead, each item is routed directly to the operating division heads who, given an opportunity to work on the problems, do conscientious jobs of checking out the validity of any suggestions. This has resulted in the cementing of relationships between operating and accounting personnel. Correction, if warranted, takes place faster and without any friction.

Mutual Respect Between Accounting and Operating Groups

As communications are improved, as the accounting departments accept a proprietorship interest in operations, and as the accountants understand more fully the problems of the operating people, a climate of mutual respect is developing. We have found that, if accounting personnel take the trouble to learn the operating people's language, if they communicate well and quickly, and if they look at the problems as though they were their own, sound understanding and respect are quickly created. With our present accounting organization structure, we feel that, if an accountant cannot communicate, it is largely because he has not availed himself of the opportunities to learn the operation well enough to discuss it intelligently.

It was in the attempt to solve this part of our problem that we found that competency of our personnel was most important. We attempt to exercise careful selection of new employees and complete the training of employees already available. At one time, it was our thinking that, if we had people who could communicate and who could have a feeling of belonging, accounting

competence was secondary, but we have found that we were wrong. We must start with competent accountants. Since common sense plays such a large part in any accounting work, most accountants can be trained by example to communicate well and to have a real sense of belonging to the organization of which they are a part.

The reaction of operating personnel to what may appear to be an unwarranted intrusion into their exclusive areas by accounting personnel evidences little resentment. We have found that operating people, too, feel somewhat isolated and that they are grateful to anyone who is willing to take the time to understand their problems and talk their language. We have been extremely careful, however, not to intrude upon their fields of authority by attempting to superimpose ideals or philosophies on purely operating matters and we believe that this has been the major factor in reducing irritation.

The Counterpart Organization Plays a Real Part

Our experience leads us to believe that the problems of effectively reflecting diversified operations through a single accounting staff need not rob that group of its ability to be valuable to operating personnel nor to isolate it from management if a counterpart type of organization structure is employed within the accounting department. By organizing accounting operations into units which are counterparts of operating divisions and stripping from those accounting groups all clerical work of a similar nature and grouping that work in a data processing operation, both low cost of accounting operation and familiarity with company operations can result. We believe that, by establishing such a sound framework, we establish short, open lines of communication. We give the accounting groups a sense of belonging to the organization of which they are a part and we create an atmosphere of mutual respect between operating and accounting personnel.

Although all of those participating in a counterpart type of organization may not ultimately become a part of management, such an organization certainly provides the best possible training grounds for accountants to develop into candidates for management positions. Additionally, accountants, although in the background many times, are constantly aware of management's problems and have a sense of participation by furnishing information which is useful to management in making its decisions. Because it satisfies all of the objectives and has few of the faults of the conventional accounting organization structure, we feel that the counterpart accounting organization does a real job for management and operating personnel and similarly offers the accountant his best chance to train for and become a part of the management team.

ARE YOU READY FOR YOUR FUTURE?

by STUART JOHNSON

The professional manager is not a specialist. He is a man with a broad outlook, vision, imagination, a capacity for gathering assistants with special abilities and a capacity to make a decision. A good many managers have already come from the ranks of the accountants. A good accountant already has the necessary abilities and has been broadening his horizons so that he will be ready. Are you ready?

What should an accountant do to achieve this readiness? First he must learn all he can about the different departments of his company, starting with his own, then getting out into the plant and studying the manufacturing operations. When a plant manager sees a daily production report, he sees machines working, people working, and material being used. When an accountant gets so he sees these things, he is getting ready for management.

So far so good. But a good manager has to go farther than studying his company. Join one or more professional organizations. Join civic organizations. Read broadly! Read your newspaper, trade magazines, popular magazines, financial papers. Learn something about economics, finance, art, music, electronics, and automation. Read some history, science, fiction. You are looking for ability to visualize, to analyze. Then write a little. Take your job and put it in writing. Will the next man be able to handle the details from what you have written? No? Well, try again.

Start making decisions, even wrong ones. Do you give your superior the facts for the problems? Well, start bringing him the answers. Outline the problem, gather the facts, study them, and then take your answer in to your superior. Ask those working for you to bring answers rather than problems. What? They will bring the wrong answers? Fine, take the time to show them why. Do you see what you are doing? You are teaching those under you. You are ready for management. You know your company, its products, its methods, its personnel, its potential, and *your* potential. You have become a doer, a teacher, and a decision-maker.

Management is in demand, but nobody is going to force you to become management. You will have to do it yourself. You will find each succeeding step easier. In a short time you are looking forward to that committee meeting. You enjoy helping Joe. There is a real satisfaction in seeing Jim get the idea. Management is ready for you! Are you ready for management?

Control of Construction Cost Let Under Contract

by J. W. BRANDT

INDUSTRY is expanding and modernizing physical assets at an ever-increasing rate. Construction costs are continuing to move upward. Sound accounting practices and controls can avoid excessive costs, unnecessary losses and costly misunderstandings. Management today is interested in better methods to control and account for construction costs.

Procedures Before Letting a Contract

Although this paper deals primarily with the control of contractors' field costs, it may be helpful to consider procedures prior to the letting of a contract. After an appropriation has been approved and given a number, the construction auditor and the construction engineer review the Detail Estimate (Exhibit 1) and assign job orders to the various phases of the project. Each job order is numbered to show the plant and department, description of work and the accounting classification. The engineering department is then able to finalize the design, specifications, and bill of materials and issue requisitions for items the company will purchase.

The engineering department forwards requisitions, bearing a cost ceiling, to the purchasing department for placement. Orders are placed and the purchasing department fills in the name of the supplier, terms, delivery dates, and the purchase price on the requisition. If a firm price cannot be obtained at the time the order is placed, the purchasing department must show an estimated price. All the miscellaneous standard construction items for a project are purchased on a single job order so that the number of requisitions and purchase orders to be issued may be kept at a minimum and to take advantage of quantity discounts. These items are placed in the field warehouse to be drawn from stock as required.

The company is now ready to ask for bids on work to be contracted for on the outside. How actively the construction auditor participates in the negotiations depends upon the type of contract to be let. His responsibilities and those of the engineer are the center of attention in the remaining sections of this article.

J. W. BRANDT is Manager of Plant Appraisal and Construction Accounting of the B. F. Goodrich Company. Prior to his present position, he was Construction Auditor for his company and, earlier, held various other positions, primarily with construction firms.

DETAIL ESTIMATE

Requested: John Doe Date: _____ Sheet No. 1
Made By: Tom Brown Date: 1-1-57 Checked by: _____ Date: _____ Appropriation #62222
Design Job No.:
Dept.: 1111 Building: Factory Floor A Mill: Pacific 2800-91506-592

Title: CONVERT 12 EXISTING 45" AUTOFORM DOME PRESSES TO PLATEN TYPE & MODIFY 13 PRESSES

Item No.	Req'd. No.	Description	Estimated Cost Material	Labor	Total
1 2800-85150	592	Convert 12 Presses to Platen Type by removing existing Domes and replacing with parts furnished per letters dated Oct. 14, 1956, and December 14, 1956.			
		Purchased parts	17,208.00		
		Freight	720.00		
		Labor 600 hrs. @ 5.50		3,300.00	
			17,928.00	3,300.00	21,228.00
		Grand Total:			39,500.00

EXHIBIT 1

Considerations in Letting the Contract

Simple lump-sum contracts do not require specialized negotiating or auditing procedures. If possible, three or more bids are secured by the purchasing department. After engineering, auditing, and purchasing departments have reviewed the bids, a contract is usually let to the lowest bidder, providing his financial standing and reputation are acceptable. The construction auditor should be an advisor in the contract negotiations. He can recommend the accounting procedures and controls necessary to assure the company makes the best possible contract. It is his responsibility to see that the contract permits the company to properly audit escalations, extras, etc., thereby assuring full value being received for any expenditure made. If progress payments are to be made the contractor is asked to furnish a monthly Billing Summary (Exhibit 2), detailed as to the various major phases of the job. This is the basis of his monthly requests

MONTHLY BILLING SUMMARY

Item	Contract amount	% Completed	Amount due
1. Demolition & Shoring	$10,000.00	10	$1,000.00
2. Excavation & sheet metal piling	25,000.00	20	5,000.00
15. Metal doors	2,000.00	-	-
16. Painting	4,000.00	-	-
Contract amount	$243,000.00	-	$33,200.00
Work order #1- 1/1/57	2,000.00		-
	$245,000.00		$33,200.00
Less: Amount previously billed			13,200.00
Gross amount this billing			$20,000.00
Less 10% retention			2,000.00
NET AMOUNT DUE			$18,000.00

EXHIBIT 2

for payment and shows the percentage of completion of each item from the start of the project to the end of the period covered by the invoice.

Most projects do have extras, changes, alterations, etc., throughout the construction period. Any change which affects the contract price must be covered by a field work order issued by the owner's engineer. This information is passed on to the design department, together with a detailed description of the work to be performed so that the reasonableness of the price may be checked. If the price is in line, the field work order is written, and signed by the contractor's representative and the owner's engineer. The problems of control are to see that:

1. The extras are bonafide and the work performed was not included in the original drawings and specifications.
2. Escalation charges are not in excess of contract terms.
3. Payments are made in accordance with terms of the contract and the contract requirements with respect to release of liens are met prior to release of any retentions.

There are several types of cost plus contracts, including:

1. Cost plus a fixed fee.
2. Cost plus a fixed percentage for overhead and profit.
3. Cost plus a fixed fee or fixed percentage of cost, with a maximum total cost.

Contractors should be requested to submit bids in sufficient detail, breaking down the various elements of cost. This permits the engineering and the construction auditing departments to analyze each quotation properly. At the time bids are requested, all contractors are informed of company policy with regard to:

1. Overtime payments
2. Items eliminated prior to computing overhead and profits
3. Equipment rental
4. Purchase of materials and equipment by the contractor
5. Cash discounts
6. Insurance coverage required
7. Subcontracts
8. Overhead items, etc.
9. Staffing of the project

The bids are reviewed, and the financial standing and reputation of the contractor submitting the lowest bid are checked. Then a meeting is held with the contractor selected to be sure that he can furnish qualified field supervision, equipment, etc., by the scheduled starting date. At this conference all elements of cost are reviewed with the contractor as well as the control procedure the company plans to follow. This preliminary discussion will save many dollars and in many instances prevents having a disgruntled contractor on the job.

Procedures to Control Field Costs

The engineer should have the responsibility of verifying contractors' costs on small projects. On major cost plus projects both a resident engineer and a resident auditor should be assigned. The engineer has the responsibility for all field construction, while the auditor is in charge of all office operations. This includes the audit of all contractors' operations, receiving, warehousing, field purchases, and the issuing of equipment and materials purchased by the company. The two, together with any other company personnel reporting to them, should meet at least once a week to review the entire project from the standpoint of:

1. Progress and costs to date.
2. Recommendations to improve performance and reduce cost.
3. Changes in equipment delivery schedules.
4. Work objectives for the following week.
5. Resolve, if possible, controversial issues between contractor and owner.

These regular meetings should result in substantial savings for the owner. For one thing, good forward planning permits the contractor to get the maximum productivity from his labor force. For example, if all materials and equipment are not on the site when needed, the job must be stopped and then men moved to other work or laid off. Fast work costs less and early completion reduces fixed charges during the construction period.

The responsibilities of the resident auditor, on a cost plus project, being numerous, require a well organized and rigidly controlled procedure. Where only an engineer is on the job, a modified version of these procedures would be applicable.

DAILY SUMMARY OF LABOR DISTRIBUTION

SMITH CONSTRUCTION CO. Contractor — Appropriation #62222 — Date _____

Plant Order No.	Amount	Plant Order No.	Amount
85150	$ 10.00	85900	$ 10.00
85180	10.00	85942	10.00
85220	20.00	85960	10.00
85850	10.00	85975	10.00
85860	10.00	TOTAL...	$ 100.00

EXHIBIT 3

Field Labor Checks and Distribution

First a check system is established for field labor. All employees of the contractor must be assigned a badge of identification. Use of different colored badges to identify the various crafts is helpful. The auditor needs from the contractor a list of construction rates for all crafts, together with all data pertaining to overtime payments, benefits, vacation pay, travel time, etc., for verification. The construction auditor, together with the contractor's representative, should establish a system for employees to check in and out and should verify attendance. At least two or more such checks should be made daily. These checks should never be scheduled for the same time each day.

Not later than the next day, a summary of each day's labor expenditure should be made (Exhibit 3). This is a distribution by job number and should be reviewed with the engineer for accuracy. Field checks and the foremen's time reports are the normal source for the data needed to prepare the report. Preparing labor distribution daily not only simplifies the preparation of the weekly reports needed for the home office but also keeps the engineer informed as to what phases of the project are being worked on daily and how each is being manned. At the end of each week, the total labor for the week is summarized by plant order number, showing the amount expended against each job during the week and the cumulative total.

This weekly report keeps the resident engineer current from a cost standpoint. It is also used by him to project out and estimate the total cost of each job order. If the projection indicates a job order might overrun, then the engineer and auditor should review the project to determine what can be done to keep the cost within the appropriation.

Contractors' Purchasing, Receiving, Storage of Materials, Etc.

All contractors' purchase orders must be approved by the resident engineer. As materials are received by the contractor, he must issue and sign a receiving report showing the purchase order, the job for which it was purchased, and a list of the items received. Receiving reports must be issued not later than the day following the receipt of the material. All copies of the receiving report must be furnished the construction auditor as soon as it is issued, for him to check the material as to quantity, condition, etc. If there are any damages, shortages, or overages, this information must also be shown on the receiving report. The construction auditor will follow up to see that the contractor makes the proper claim in case of damages or shortages or bears the cost of returning material not needed. Periodically a spot check should be made to verify that the owner is

MATERIAL COMMITMENTS - WEEK ENDING

SMITH CONSTRUCTION COMPANY — Appropriation #62222

Contractor

P. O. No.	Supplier	Description	Amount	Date Plant Order #
2150	ABC Electric	Conduit	$ 20.00	85180
2152	Hill Fitting Co.	3/4" Black Iron Pipe	50.00	85942
2155	Jones Supply	Misc. Elec. Supplies	25.00	85900
2156	Fry Supply	Tank Oxygen	15.00	85850
2157	Ace Pump Co.	Water Pump	200.00	90045
2158	Roth Supply	Office Supplies	30.00	90046
2159	Lang Hose Co.	100' Hose	20.00	90045
		TOTAL....	$360.00	

EXHIBIT 4

receiving the benefit of the lowest price and the best terms available on purchases made by the contractor. The auditor should make a weekly report of all contractor's commitments (Exhibit 4) similar to the weekly labor summary.

As the contractor receives invoices in duplicate from suppliers, he should immediately check, approve, and submit them to the auditor, who will compare the invoices with his copies of the purchase order and receiving reports. Errors in quantity, amounts, extensions, etc., must be called to the attention of the contractor and adjustment made immediately. Processing invoices as soon as received eliminates controversy at billing time, expedites payment, and makes auditing of the monthly billings a routine operation.

Construction Equipment and Tools

One of the most neglected items of construction cost is rental equipment. This phase of construction offers many opportunities to make considerable savings. On the other hand, failure to properly control the cost of rental equipment can add thousands of dollars to a large project. There are a number of basic fundamentals that can be followed to keep rental costs to a minimum:

1. Have the contractor secure the approval of the field engineer before renting any equipment.
2. Determine the approximate period the rental equipment will be needed and determine if it is more economical to purchase than rent.
3. Negotiate rental on the basis most economical to the company. Rates vary, dependent on basis agreement is made.
4. Determine whether the rental rate is for the bare equipment, which means that the cost of operators and ordinary maintenance and fuel, etc., is to be paid by the user. Repairs and overhauls over and above

ordinary maintenance and repairs never should be a reimbursable item.

5. Have the engineer check to see that the equipment is in good and workable condition when received. Necessary repairs must be done at the equipment owner's expense. The auditor must see that cost of this type is not included in the billing by the contractor.

6. Check the equipment at least three times a week to make certain that all units are still on the site and are being used. Any unit not in use must be removed from the rental list.

7. Small tools are usually purchased by the contractor and charged to the job. The field auditor should establish controls to safeguard these assets. At the end of the project they can be sold for salvage or transferred to other projects, if needed.

Sundry Field Items to Control

There are items that do not fall under the controls discussed above, which, nevertheless, are important and must be controlled rigidly. Many cost-plus contractors sublet phases of the project on a fixed-cost basis. The contractor should be required to obtain at least three bids and the owner must approve any subcontract before it is awarded. Combinations of cost-plus and lump sum contracts need special attention. The auditor must make certain that any items of material and/or labor furnished by the cost-plus contractor to any of his subcontractors working on a fixed price basis, are not charged twice.

Trucks and other vehicles leaving the job must be checked and a pass issued by owner's representative before the vehicle leaves the site. This is to make sure that no materials and/or equipment belonging to the owner are removed from the premises without approval.

The contractor may not add to his field staff (non-union personnel) without obtaining the approval of the owner. The resident engineer is responsible for such additions in the area of field construction (as engineers and general foreman), while the auditor is responsible for additions to the office (timekeepers, field checkers, warehousemen, etc.). Also, the contractor may not work overtime without approval of the owner.

Records should be maintained of all drums and containers on which deposits are recoverable when they are returned. Moreover, a record should be kept of railroad cars received on the site so that demurage charges can be kept to a minimum. The unemployment tax rate charged by contractors should be checked that it is actually the rate paid by them.

A Service to Capital Economy

All agree that good design plus proper control over expenditures results in economic construction. Economic construction means the company's investment in fixed assets has been kept to a minimum. Though the construction auditor does not have anything to do with the design, he can still play an important part in minimizing capital expenditures, thereby maximizing his company's return on investment.

ACCOUNTING IS A LANGUAGE

To the manufacturing personnel of our company cost accounting is a simple and effective language for planning and clear and concise measurement of performances. Weekly or daily reports communicate actual performance and motivate supervisory management to take corrective action. Complete cost reports, based upon quarterly inventories and tied in with the general ledger accounts only confirm the interim reports.

Material usage reports measure actual input and output of major materials against standard, are issued on a weekly basis, and show variances in quantities and dollars. These reports, based on factory reported data, are issued by the following Wednesday morning. Monthly material reports are issued by the sixth working day. Labor costs are grouped by categories and no direct labor employee may be coded to an indirect labor account. Direct labor is measured against standard and all downtime and non-productive direct labor is reported by cause. Burden reports, issued on a monthly basis, identify variances in three categories—spending, efficiency, and volume. Expenses are measured against budget allowances based upon actual operating levels and expressed as shifts of production. Differences represent spending variances. Efficiency variance is arrived at by comparing variable burden absorbed through production with budget allowances for the number of shifts worked. Volume variance is segregated as outside the department manager's area of responsibility. Weekly production reports in which the earned machine hours are measured against agreed upon speeds and downtime allowances are issued two days after the close of the week.

In reporting to the factory, we no longer send cost reports to the production supervisor, we *take* them. Regular scheduled meetings have been arranged in which the cost accountant presents the reports, discusses the results, and points out areas which may appear to be causing variances. This meeting also serves as a point of communication in which the accountant and the production supervisor can exchange ideas or discuss changes in manufacturing processes as they may effect cost.

JOHN M. MARTIN

Cost Control Budgeting Which Extends to Daily Reporting

by JOHN E. McDONALD and CLEON A. JOHNSON

THE PURPOSE OF THIS ARTICLE is to describe the development of a daily budget in a manufacturing operation. Stress is placed on the control aspects of budget reporting as opposed to the purely accounting features involved. Typically, the foundation work of budgeting—the forecast—has been the most difficult source material to secure. However, with the current emphasis on planning, budget procedure assumes a place among management controls that cannot be supplied by any other measuring device. Of no less significance, has been the introduction of tabulating and other mechanical equipment to handle on a daily basis the great mass of detail information flowing through the accounting organization. Information that could not have been economically gathered by hand clerical methods is now readily available and can be summarized and put in usable form rapidly and accurately.

At the manufacturing level, where the acceptance of mechanical and technical improvements have been most marked, management has not, generally, fully utilized the possibilities of the budget system. Possibly this is the result of reliance on other measures easier to compute. Ratios and other expressions based on such tangibles as physical output, machine operations and other measurables compared to standards are excellent guides. Used in conjunction with such guides, budget reporting can provide responsible operating people with the full picture of their operation at frequent intervals. It should be mentioned, however, that little can be accomplished without management's conviction that cost control is necessary. In our case, this conviction was present. The management involved has been uniformly insistent that sound operations could not be achieved until the foremen were currently, accurately and completely informed of the results of their operations against pre-determined standards. Though recognizing the problems of developing complete daily figures with a small staff, the goal of regularly reporting cost performance as measured by budgeted allowances was set as a minimum achievement for cost accounting's contribution to the manufacturing plant.

JOHN E. McDONALD and CLEON A. JOHNSON are, respectively, Plant Auditor and Cost Control Supervisor of the Santa Clara Plant of Owens-Corning Fiberglas. Mr. McDonald has been associated with this company since 1945, Mr. Johnson since 1952.

Company Processes and Costing System

For better understanding of the cost accountant's situation, a brief summary of the concern's method of operation is in order. The plant is the only manufacturing facility of an operating division of a large national concern engaging in making a variety of basic products of glass fibers. The average plant employment of 350 includes 220 men directly engaged in producing approximately 7,500,000 pounds per month of insulating and acoustical products, primarily for the construction, industrial and similar markets. All production originates with one of three basic manufacturing lines which processes a particular type of fiber from raw batch material to a finished or semi-finished product. These production lines normally operate on a twenty-four hour day, seven-day, per week schedule. An additional nine cost centers exist to cover fabrication of semi-finished materials into specific end products. These fabricating operations vary widely in activity, from continuous operation to several operations averaging only a shift or two per month. There are also nine cost centers for warehousing, systems, maintenance and other services.

The standard cost system in use is well designed for the basic operations even though it lacks some of the flexibility desired for new or made-to-order products. Standard costs for any range of products for any typical period have consistently shown a negligible variation from actual costs. The costing of products is based on a typical standard expense schedule for each cost center. This schedule establishes absorption rates for fixed costs on the basis of some measurable unit. A scheduled machine hour is most commonly used. A fairly detailed write up, called a budget write up, supports each cost account, with the calculations used in determining the standard rates or budgeted allowances. Variable expenses such as labor, raw materials, processing and package materials, which vary widely even in products produced in the same department, are not included in the standard expense schedule but are calculated and budgeted for each product. Wide use is made, however, of standard labor crews (as determined by industrial engineering studies), product categories, packaging codes and other groupings which have been developed. The standard expense schedules and, hence, the costs are normally reset each calendar year and are adhered to for the year except where technological changes so alter conditions as to make costs inaccurate for a group of products.

Help from the Planning Staff and the Supervisors

Preparation of standard expense schedules and budget write ups begins, of course, with sales forecasts and, here, the market analyst proves his worth to

the manufacturing plan. Though the sales forecast may still evolve from the salesman through the branch to the division level, the coordinating efforts at the division stage result in a vastly improved plan for manufacturing's use. Modern sales forecasting should emphasize sales by market or product type so that the sales plan can readily be converted into machine loading with a resulting accurate picture of activity levels. A sound sales forecast will also predict volume variations by quarters or other time periods. This information is important to the plant budget people in determining where they must set semi-fixed costs for varying levels of activity.

Building on the sales plan, the product development, engineering, purchasing and production planning groups can readily contribute their parts to a reasonably accurate composite picture of the period or periods to come.

Working cooperatively with the supervisor to set a sound budget for each cost center is largely a challenge in human relations. The budget people hold most of the cards. Equipped with a variety of information on past performances and the information garnered from the various plans and forecasts previously mentioned, it is easy for them to overplay their hand. The cost center supervisor has little defense against the statistics and averages that may be presented and some reluctance to predict the effect of projected activity, new products or anticipated technical or mechanical improvements. If, however, the supervisor's superior knowledge of his operation is not freely expressed in the final budget write up, the budget will lack the necessary element of supervisory responsibility. In fact, it frequently works out that, given adequate information during the previous period, the supervisor will set tighter allowances than past experience would indicate. This is especially likely if the budget people have properly developed the point that trends in labor rates and material cost can only be offset by a continuous increase in the efficiency with which men, materials and machines are utilized.

Monthly Reports Useful But Inadequate

Reporting of budget performance is a matter that must be tailored to the organization. The budget reports discussed here are the daily and monthly report showing, in dollars, variations from allowances by cost center and by cost account. The monthly report (Exhibit 1) is a departmental standard cost variation statement showing actual cost for the month and year to date and the budget variation for the same periods. Such a report is prepared for each cost center for distribution to all supervisory and staff people concerned with the manufacturing operation. In addition, other operating figures are included to give a comprehensive picture of the department's results in all respects

COST VARIATION STATEMENT - SANTA CLARA PLANT

Mach. Hrs.	% Activity	AMOUNT
		Plant Std. Cost Per Average Month
		Plant Std. Cost of Current Month's Prod.
		Plant Std. Cost Per Scheduled Machine Hour
		Budget Allowance Per Scheduled Machine Hour
		Plant Actual Cost
		Plant Std. Cost of Year to Date Prod.

No.	Description	Actual Cost		Budget Variances			
				This Month		Year to Date	
		This Month	Year to Date	Under	Over	Under	Over
	LABOR:						
600	Direct Labor						
640	Direct Labor Bonus						
	TOTAL COST						

	Mach. Effy.	Net Variation
Current Month		
Year to Date		

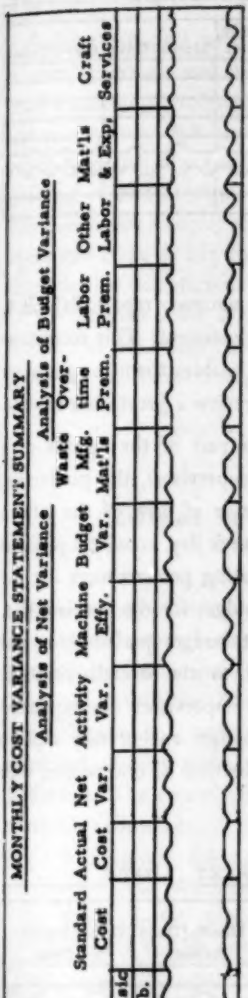
EXHIBIT 1

other than those attributable to activity.

A cost variation statement summary, Exhibit 2, presents for management's use a summary of variances in which each department's variance is analyzed as to causes in activity, machine efficiency and budget performance. Variation is further broken down into six main headings which emphasize the areas in which specific controls are effective. Basically, all variances, other than activity, are considered controllable by the supervisor. Because of the number of calculations required to make this report, it is not scheduled for completion and distribution until the fifteenth of the month. This schedule is too slow for a report designed to promote corrective action. The variation statement does, however, serve as the basis for monthly meetings of the cost control and the supervisory personnel of each department. At this meeting the cost people can amplify the figures on the statement, production people can contribute information bearing on the results achieved and the accomplishment of the meeting is a better mutual understanding of the operation.

The Rise and Fall—and Rise—of Daily Reporting

The daily budget report, Exhibit 3, is intended to be an action report. It has a somewhat checkered history. In the early days of the plant operation, when production was limited to a few basic operations, the daily departmental budget report included actual costs and allowances for each cost account and a summary by departments for the plant manager. As production began to include more and more fabricated items, the detail work to compute allowances and accumulate actual costs became a great clerical burden. Frequently the budget report was as much as a week behind schedule. In an attempt to stay



MONTHLY COST VARIANCE STATEMENT SUMMARY

No.	Department Name	Standard Cost	Actual Cost	Net Var.	Analysis of Net Variance: Activity Var.	Machine Effy.	Budget Var.	Analysis of Budget Variance: Waste Mfg. Mat'ls	Over-time Prem.	Labor Prem.	Other Labor	Mat'ls & Exp.	Craft Services
211	Bonded Mat Basic												
212	Bonded Mat Fab.												

EXHIBIT 2

current, many estimates were used in lieu of actual costs. The production people lost confidence in the report and it ceased to promote action and was discontinued in favor of a report covering labor hours only, to encourage close supervision of one of the major controllable cost items.

However, this kind of reporting fell far short of the minimum acceptable goal. For one thing, reporting variance in units other than dollars lacked the full meaning and impact of the latter. Further, while the supervisor might have a fairly good idea of his outlay for materials, maintenance and other expenses he could observe being consumed daily, he was seldom prepared for various unusual or non-recurring charges that might show up in his monthly statement. About this time production and general accounting procedures were adapted to tabulating equipment. By designing the master cost cards for each product to include coded data, it was feasible to get each day's production recapitulated so that labor and material allowances could be computed with reasonable ease. In addition the actual charges to various departments and cost accounts could be secured with relatively little effort. It was now again within reach to report to each department daily the major items of expense and their variation from an accurately calculated allowance.

This daily budget report confines itself to reporting, in dollars, costs over which the supervisor can exercise direct control. Other departmental expenses not resulting directly from the supervisor's actions are not reported daily. This distinction is based on our experience that, in reporting for control purposes, it is important not to obscure controllable figures with non-controllable figures thrown in merely to achieve

DAILY BUDGET REPORT							
				Adjustments			
Item	Std.	Actual	Over/Under	Act.	Std.	Month/Date	Over/Under
Direct Labor							
Indirect Labor							
Other Labor							
Craft Services Labor							
Total							

EXHIBIT 3

the accountant's natural desire to strike a balance. A summary report, Exhibit 4, goes to the plant manager and the production superintendent. This recapitulation, supported by copies of the cost center reports, enables them to spot areas where special attention is needed without having to review a great mass of data.

The daily budget reports are distributed daily as part of the agenda of a daily production meeting of all of the production supervisors, the production superintendent, the plant manager and a representative of each of the latter's staff departments. This meeting, held at noon each week day, considers planned operations for a day or so ahead, reviews the operating performances for the period ending at 8 a. m. the current day, and the budget for the previous day. The cost control supervisor reports the total plant budget performance and makes whatever comments he considers pertinent to the overall situation. Departmental reports distributed to the production supervisors are supported by tabulating runs and any special comments the budget analyst may wish to make. The daily reports require the greater part of the time of one person, with part time clerical assistance.

DAILY BUDGET RECAP SHEET DATE_____

Department	Std.	Actual	Over/Under	Month/Date Actual	Over/Under To Date
211 - Bonded Mat Basic					
280 - Warehousing					
TOTAL					
Remarks:					

EXHIBIT 4

The Ultimate Goal

Seeing the budget not as a report but as a measure of the effective utilization of men, materials and machine—this is a final objective and can come only from continuing education. The budget people must first dispel the mysteries and uncertainties that surround their jargon and methods. If production people are to be drawn into budget preparation they must have as thorough an understanding of budget methods and objectives as the budget people can develop. The production people, on the other hand, have a responsibility to make their operations come to life for the budget people. This should not be so difficult. The effective and efficient performance of an operation is largely the expression of the common sense and good judgment of the responsible supervisor. The function of the budget, the same as all line and staff functions, is to enable the supervisor to make prompt decisions based on solid information.

CENTRAL FUNCTIONS OF A RECORDS CENTER

by OTHA M. BROWN

After a study of volumes, our record center was located in close proximity to the home office and the Richfield Oil Corp., Wilshire Blvd. building which houses our marketing department and company-wide tabulating installations. The center's facilities represent the following:

1. A fireproof warehouse with continuous watchmen service.
2. Very careful limitations of access to the records.
3. Descriptive labels eliminated so that strangers would be unable to walk in and pick out an item.
4. A locked cabinet for an index.
5. Records center personnel on duty at all working hours.

The transfers of records from the outlying offices to the record center are on a scheduled basis. In most cases, each office has a supply of knocked down Record Center Cartons. However, if it is a small office, the records center will supply the number of cartons necessary to handle the immediate need. We instruct them that one file drawer, either letter or legal size, equals two of the containers. The records are placed in the cartons in the same sequence that they are in the filing cabinet, packed quite loosely. A temporary number is given to each box which is used to identify it until it is assigned a permanent location number in the records center. The center has

the records picked up, providing transportation, and also provides technical assistance.

A records transfer disposal schedule was prepared at the start of the program. It shows three retention periods for each type of records.

1. Maximum time to be retained in the office, i.e., active files.
2. Additional period to be stored in the record center.
3. When the record can be destroyed.

It is most important to follow this schedule religiously, as a failure to do so will tend to weaken the will to destroy, so to speak, and the tendency will be to fall back into the old habits. The record center will annually notify each department of its stored records scheduled for destruction. The schedule is subject to change by a complete study and approval of appropriate company executives.

The center stresses that the records are as close as the telephone. Instruments are placed throughout the center with a long cord and a rapid locator index. The records clerk locates the record and reads the information from the document over the telephone. A very definite procedure is set out when making the request by telephone. The inquirer gives the following:

1. The name of the person calling, the department and the extension number.
2. Title and date of record and sufficient detail to identify the particular document desired.
3. The information required from the document.

The center is on company scheduled mail runs. When it is deemed necessary to peruse the document (or documents) or a complete file, they can be sent to one office the same morning, if the request is made prior to 9 a. m., and to more distant offices the same afternoon. If an "urgent" sticker is placed on the written request or the telephone message indicates "urgent," the record center sends the documents out by special messenger. It follows up if they are retained longer than ten days over the estimated period. (They may be passed on to others, but the record center must be notified.)

Photocopies of the original records may be furnished, which can be thrown away after they have served their purpose. Also, there is a reference room available at the records center, having a desk, typewriter, and adding machines for the use of anyone desiring to search records.

How We Follow Up the Capital Expenditures We Have Made

by ROBERT W. GRIFFIN

CAPITAL EXPENDITURES IN OUR ORGANIZATION originate through the issuance by one of our operating divisions of a form known as a recommendation for appropriation, which briefly describes the equipment to be purchased or the work to be done. This form is like many frequently used. The job number is assigned by the engineering department and this number is applied to all expenditures related to the job. The recommendation includes an explanation of the objective of the purchase and the results which are expected from it and indicates the saving which is to be achieved.

This was, at one time, a sufficient procedure. The savings were always measured in terms of direct labor and bore considerable influence on the approval or rejection of the expenditure. As well as showing the direct dollars which were to be saved, the savings were also expressed as a percentage of the cost of the equipment or project. After the installation of the equipment and the related work was completed, the recommendation was closed. There was no formal procedure for follow-up.

Estimate of Amounts Projects Will Return

With the rapid improvements which are being made in machines and techniques today, including automation of process sequences, this procedure is no longer a practicable one. We find ourselves in a period in which the saving in direct labor is not necessarily the chief measure of whether or not equipment should be purchased. Sometimes when the purchase of new automatic equipment would considerably reduce the direct labor required, other expenses tend to offset this saving. Our first step looking towards a follow-up procedure on newly-installed equipment was to go back over a two-year period and ask the divisions to send a report on all installations which had been completed during

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ROBERT W. GRIFFIN is Production Engineer with the American Brass Company, and has been associated with this company since 1942. Mr. Griffin is a graduate of Dartmouth College.

that period, showing the savings made. A review of these jobs led us to change our concept of savings. We now look upon our capital expenditures as projects in which we can make an investment and from which we anticipate an annual return computed in dollars. We decided to apply the change first to our manner of estimating savings on outlay recommendations. This made it necessary for us to issue new instructions to the divisions entitled "Methods of calculating return on capital outlays" proposed. Seven of the more significant paragraphs from the instructions follow:

1. *Reduction in manpower required*—Where a job results in cutting down the number of men on a machine, operation or related operation, this method of calculating the saving is applicable. To report the annual return due to a reduction in manpower, show the number of men eliminated from the operation and multiply this number by the annual rate. The number of men in both the old and new crews should be given so that the reduction will be apparent. Where the operation is for more than one shift, consideration should be given to this fact. If a reduction is for the crew needed on a related job, give sufficient information to make this reduction clear.

2. *Reduction in cost*—Where a fixed asset installation improves an operation, but not to the extent of reducing the crew numerically, the return may be calculated on a cost-per-M-pounds basis. To do this, show the cost of the operation before and after the change by dividing the wages by the pounds worked on. The difference, multiplied by the annual pounds worked on, is the annual return. The manufacturing divisions should use the unit cost basis that applies to their product. It is expected that the divisions will use figures which can be substantiated. To get the annual figures, monthly averages may be used.

3. *Reduction in expenses*—A capital outlay can have as its objective the reduction of expense. For such jobs the actual return in expense saved should be calculated and projected to an annual basis.

4. *Department manufacturing profit*—Some recommendations or groups of recommendations are for large projects and the return cannot be calculated by one of the previous methods. In such cases, the overall production cost of a department before and after, may be used, applying the manufacturing profit for the department against the production. When a manufacturing cost is expected to be reduced, the reduction may be applied against the entire production. Where the production is expected to be in-

creased, the manufacturing profit may be applied to the increased poundage.

5. *Product profit*—If a recommendation covers machinery for a new product, the expected manufacturing unit profit for the product may be multiplied by the production of the item to arrive at a return figure. This method should only be used for products which a division has not produced before.

6. *Combination method*—In submitting reports, it may be desirable to use more than one of the above methods to calculate the return. For example, a piece of equipment might be installed on which the crew was reduced and increased production obtained. In such a case, you would use methods Numbers 1 and 3 to calculate the return, adding the return achieved for each part to arrive at the total return for use on the recommendation for appropriation form.

7. *Jobs which show no return*—There will be some jobs on which a return cannot be shown. In connection with these jobs, we would like some explanation on the report which you send in so that it will be possible to determine why the work was done.

Follow-Up Procedure

After a recommendation for a project has been approved and the accounting assignment (construction, operating expense, etc.) made, we receive a copy from which we make two copies, adding the overlay shown in Exhibit 1. The symbols on this control our follow-up procedure. The indication, "assigned to," refers to the production engineer to whom the project has been assigned for follow-up. "Date closed" is the date on which the job was completed. We generally indicate this by month and year only. The "cost" is the completed cost. The "32.033" designates the report form, noted below, which we receive from the divisions. "O.K." indicates that the equipment is operating satisfactorily and producing the return which was estimated on the recommendation. The return is shown in the "saving" section. "NoR" is used to designate jobs on which no return on the investment was expected. "N.F." stands for not final, meaning that the recommendation form is submitted only as a report on the interim status of a project. For reports which we receive as "O.K." or "NoR" we mark the year reported as an indication of the calendar year in which this project was completed and in which we reported the return on our investment, if any. The space for "class" applies principally to projects on which no return was anticipated and, in a word or two, describes the reason

for the expenditure, such as replacement, safety, etc.

As implied at the start of the preceding paragraph a copy of the approved appropriation recommendation is given to one of the engineers in the production department who is most familiar with the equipment included in it. When the job has been finished and the installation complete, the completed construction cost is posted on the copy of the recommendation. This is the production engineer's signal to begin his follow-up on the efficient operation of the equipment. He uses the information contained in the recommendation itself and the overlay.

OVER - LAY FORM APPLIED TO APPROPRIATION RECOMMENDATION			
Assgd. to	Date Closed		
Cost			
32.033 Rec'd	OK	NoR	N. F.
Saving			
Year Reported			
Class			

EXHIBIT 1

REPORT ON COMPLETED JOBS

Date_____ Department _____ Job No. _____

Description:	Date Closed Out	Construction Cost	Annual Return
Method of calculating return is shown at bottom of this report.			

EXHIBIT 2

However, since the visits of our production engineers to the various divisions are intermittent, we also send each division a monthly list of the job numbers on which we expect a report. This is in the form to which Exhibit 1 refers by numerical symbol and which is illustrated by Exhibit 2.

It might be mentioned here that projects followed include some of an expense character. These may be projects on which the division expects to

RETURN ON COMPLETED CONSTRUCTION — BY DIVISIONS

	1956		1955	
	Cost	Return	Cost	Return
A Division	$312,722	$ 60,547	$ 2,951,596	$ 522,122
B Division	158,420	20,500	351,124	25,628
C Division	241,134	40,209	166,439	20,815
D Division	950,791	163,192	185,170	45,659
E Division	69,915	15,681	75,794	47,341
Total	$1,732,982	$ 300,129	$ 3,730,123	$ 661,565
	17.3%		17.7%	

Fictitious figures have been used.

EXHIBIT 3

show a return or the expense items which are part of a large capital project. The latter are included with the capital expenditure and the completed costs of both projects are added together when we show our return on the project. This is done so that we will not overstate the annual return which we are achieving.

Exhibit 2 is entitled Report on Completed Jobs and is a very simple form giving the date on which it was prepared and sufficient data to identify the appropriation recommendation which is being covered. The annual return is stated in the heading and also is shown as a percentage. The method of calculating the return is then shown in the body of the form. If there is no return or the report is an interim report, an explanation is inserted here. We recognize the fact that some equipment can be put into production as soon as the installation is complete. Other equipment of a larger and more complicated nature may take many months before it is operating satisfactorily. Of course, there is some

ANNUAL RETURN ON PROJECTS REPORT - 1956 "A" DIVISION

	Department	Title	Cost	Return
R-1033-Rev.	Sheet Metal	Materials Unloading Platform	$ 25,948.00	$ 4,320.00
R-1045	Metal Storage	Large Dempster Cabbaging Machine	$ 38,144.00	$15,439.00
R-1047	Sheet Metal	Control for Coiler on 14" 4-High Rolls	$ 8,205.00	$ 2,000.00
R-1063	Drawn Copper	Reclaiming Copper and Acid from Pickle Tubs	$ 4,529.00	$ 3,475.00
Total.			$ 76,826.00	$25,234.00
R-1039	Sheet Metal	Heavy Coiler for 14" 4-High Mill	$ 53,192.00	Necessary to operate*
R-1052	Casting Shop	Three 2-ton Serving Crane Hoists Three Cross-over Platforms	$ 6,765.00	Safety*
R-1062	Sheet Metal	Grain Size Equipment	$ 2,698.00	Quality Control*
R-1067	Case & Coop.	New Cut-Off Saw	$ 2,662.00	Replacement*
Total.			$ 65,317.00	
Grand Total.			$142,143.00	*REMARKS

Fictitious figures have been used.

EXHIBIT 4

equipment on which no annual return can be achieved nor was one expected when it was purchased. In the method of calculating the return, every effort is made to have our figures as accurate as possible and to tie them in to our accounting records.

We expect a division to submit a report-on-completed-jobs form within six months after approval and, if it is a large project, we expect a progress report every six months thereafter. The form thus serves as a progress as well as completion report. Copies of these reports are given to the production engineer assigned to follow-up on the job so that he will be familiar with the status of each recommendation when he visits a division.

Twice a year we issue a report for our executives summarizing the reports on completed jobs. Exhibits 3 and 4 are samples from this and the following are the two introductory paragraphs:

> "These reports cover the annual return on the construction jobs which have been completed at the company divisions. The annual

return reported is from comparisons made at the division level. These comparisons do not include charges for general and administrative, general selling, metal profit and loss, depreciation, and tax expense. It is expected that this return will continue with production at a reasonable level."

"To be included in this report, a job had to be operating efficiently and in operation long enough for comparative results to be obtained. In some of the major jobs for which the expense portion has been sizeable, we have included the expense so that the percentage of return shown would not be inflated."

At the start this report caused a little confusion as the cost of the jobs on which we can show an annual return is usually considerably below the amount of money which has been spent. This is due to the time which it takes to get equipment in operation, as explained previously. However, our executives are always conscious of the amount of money which has been spent and anxious to show a return on this amount. Therefore, when this report was first issued, we found it necessary to issue also a statement reconciling the figures to the amount of money which had been expended. However, of recent years, this has been regarded as unnecessary and the difference between the two reports is now accepted. As a matter of record, we do keep track of the amount of money invested in jobs which have been completed and on which the divisions have not made out a report showing the annual return for the installation.

Tentative But Useful Results

The procedure is working out reasonably well and certainly is an improvement on the entire absence of follow-up, which previously existed. Since the years of World War II, the investments made in modernizing and improving our plants and equipment have been tremendous. The larger amounts of money spent and the greater complexity of the equipment installed have brought about the procedure which has been described. In the future it will be necessary for us to pay more attention to the study and development of projects prior to the writing of a recommendation for an appropriation. Such a program, as well as more scientific and formalized method of evaluating the results of our expenditures, is being worked on and in progress. Thus, our program of evaluating our capital expenditures is considered to be a dynamic one. Continued efforts are being directed to improve upon present methods and techniques. Nevertheless, the current procedures are a definite step forward and have made a decided contribution to company use and understanding of the evaluation of capital expenditures.

Structure and Services of the Cash Budget

by GROVER E. EDWARDS

AFTER ESTABLISHING THE SALES VOLUME and after the operating budget has been approved, many companies have found it necessary to prepare a cash budget. Why? Because, in today's business, it is necessary to know in advance by month, yes, even years, how much cash will be required for plant expansion, operating costs, and for increased receivables and inventories resulting from expected increases in sales volume.

In our company the sales policy committee forecasts the expected sales volume for the coming years and the accounting department establishes the realted operating budgets just as is done by many other companies. However, we go somewhat further and establish a budget for a sales volume that is somewhat higher and another for a sales volume that is somewhat lower than the original sales forecast. We also prepare cash budgets based on all three of the operating budgets. The two extra budgets are primarily a safety factor. Our cash budgets may show a drop in profits and a decrease in cash to a dangerously low point and we may need to obtain loans in advance of normal requirements to be on the safe side. On the other hand, the cash budgets may show that an increase in profits will cause an excess amount of cash and we will then be prepared to invest this cash or to pay off any loans that are no longer needed.

In order to prepare the cash budgets, we made certain assumptions in addition to the ones already made for the operating budgets, such as:

1. Minimum cash balance to be maintained.
2. Cash collections.
3. Payment dates.
4. Inventory increases and decreases.
5. Plant expansion programs.
6. Depreciation policies.

Minimum Cash Balances to be Maintained; Collections

The minimum cash balance to be maintained must be decided upon before preparation of the cash budget can be started. Although the cash budget, when

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GROVER E. EDWARDS is Assistant Auditor, Barber-Greene Company, Aurora, Illinois, and has been affiliated with this company since 1952. Prior to his present position, he served on the Field Audit staff of the Atomic Energy Commission in Los Alamos, New Mexico, and later as Budget Examiner for the Atomic Energy Commission in Kansas City, Missouri.

CASH BUDGET - ASSUMPTIONS

1. Cash balance to be maintained (minimum)
2. Accounts receivable - 2/3 of previous months net sales
3. Notes receivable will increase $100,000 per quarter
4. Inventory: Increased $800,000 11/30/56 and 2/28/57
   Decreased $300,000 5/31/57 and 8/31/57
   Extra inventory required due to addition of another plant $300,000 5/31/57 plus $500,000 8/31/57
5. Plant Expansion program:

		Land	Bldgs.	Machine tools & other equip.	Total
1st Qtr. End.	11/30/56	$60,000	$100,000	$	$160,000
2nd Qtr "	2/28/57		350,000	30,000	380,000
3rd " "	5/31/57		400,000	50,000	450,000
4th " "	8/31/57		700,000	40,000	740,000

Replacement Program

1st Qtr. End.	11/30/56	$50,000	3rd Qtr. End.	5/31/57	$ 50,000
2nd " "	2/28/57	50,000	4th " "	8/31/57	50,000

(Depreciation will offset additions)

6. Cash value of officer's life ins. increase $3,000 per qtr.
   Prepaid pension plant payments

1st Qtr. Due	9/30/56	$50,000	3rd Qtr. Due	5/31/57	$ 10,000
	10/31/56	10,000	4th Qtr. Due	6/30/57	65,000
2nd Qtr. Due	12/31/56	5,000		7/31/57	11,000

   (Others to remain approximately the same as beginning of quarter.)
7. Accounts payable bal. - 12/2 per cent of next qtr's. expected volume.)
8. Accrued liabilities:
   Accrued commissions - 4.1% of previous sales volume
   Cash profit sharing - 10% of previous quarters net profit
   Profit bonus - 15.9% of net profit, payable in November
   Profit sharing savings - 10% of average monthly net profit for previous quarter
   Accured payroll - Proportionate to sales volume for following qtr.
   Accrued taxes - Sales taxes proportionate to vol. (.11%)
   Property taxes - $60,000 for 1957, payable 60% in May 40% in Aug.
   Social security - same as 1955 except for add'l. employees
   Donations res. - 5% of net profit before taxes, less $5,000 per month paid
   All others unchanged from 8/31/56
9. Federal income tax - Additions per profit schedule

Payments - 1955-56			Payments -1956-57	
10% already paid			10% of est. tax due	5/15/57
50% of bal. due	11/15/56	$812,000	10% of est. tax due	8/15/57
Balance - due	2/15/57	812,000		

10. Deferred income on installment notes was 36.6% of total notes receivable on 8/31/56. This percentage has been used for each quarter.
11. Repayment of long term debt, to maintain the $1,000,000 cash balance.
12. Net worth and capital stock unchanged, surplus increased by net profit after taxes, cash dividends (present plan) $80,000 quarterly on Jan. 1, Apr. 1, July 1, and Oct. 1.
13. Net sales - Annual Vol. $36,000,000

1st Qtr.	20%	7,200,000	1st Qtr.	540,000
2nd Qtr.	20%	7,200,000	2nd Qtr.	540,000
3rd Qtr.	30%	10,800,000	3rd Qtr.	810,000
4th Qtr.	30%	10,800,000	4th Qtr.	810,000

Net profit - $2,700,000 (7.5% of volume after taxes and bonus)

Note - For this example only one year of operations and expansion program are shown, though normally a budget should be prepared for a longer period especially when an expansion program is undertaken.

EXHIBIT 1

completed, will enable us to prepare for the large anticipated cash expenditures, it is equally as important to provide an adequate cash balance for the day-to-day fluctuations resulting from normal plant operations. Cash collections, payrolls and other expenditures are usually not spread evenly throughout the budget period. Cash collections may be delayed for some reason or an unexpected expenditure of a considerable amount of cash may be necessary. Consideration must also be given to the minimum balances required by banks or other loan agencies, to maintain credit for future loan requirements.

In order to establish the minimum cash balance we needed, a study was made to determine what our cash balances had been during past periods. Based on this information, we decided on the minimum cash balance for the budget periods. Where two or more companies are to be consolidated for budget purposes, a minimum balance is established for each. Often the movement of cash between companies is restricted by income tax consideration, by inter-company dividend policies, or other reasons. These must be taken into account.

When our cash balances decrease below the established minimum, we assume, for budget purposes, that additional funds will be provided by long or short term borrowings, whichever may be required. When cash balances increase above the required minimums, the excess cash is applied in the budget to reduce outstanding loans and, after these are paid off, is shown as invested in U. S. Government bonds. Actually the terms of a loan will govern repayments but, for budget purposes, payment of the loans is shown as described above, because the terms are not known when the budget is prepared.

How soon after a shipment is made can we collect the cash — 10, 20, 30 or more days? Will sales be made on conditional sales contracts under which payments are extended over a longer period of time, possibly up to several years? To provide us with information in this area, we prepared an analysis of previous monthly accounts receivable balances compared with the monthly sales volume. This comparison showed that the accounts receivable balances averaged 62 per cent of the previous month's sales volume. The study also brought out the fact that our collections average around 20 days from the date of shipment to the date of collection. For cash budget purposes, we decided that the accounts receivable balances should be 66 per cent of monthly sales, to allow for possible extension of credit terms.

Conditional sales contracts, with payments being made on an installment basis or some other basis, will increase notes receivables balances and reduce cash collections. Such sales are often necessary to increase, and sometimes just to maintain, sales volume. Our notes receivable usually increase during the

CASH BUDGET - BALANCE SHEET

(Thousands of dollars)	Sept. 1, 1956	Nov. 30, 1956	Feb. 28, 1957	May 31, 1957	Aug. 31, 1957
Assets					
Cash and Gov't Bonds	1,600	1,139	1,000	1,135	1,264
Notes Receivable	1,500	1,600	1,700	1,800	1,900
Accounts Receivable - less reserve	2,222	1,600	1,600	2,400	2,400
Inventory	7,500	8,300	9,100	9,100	9,300
Total Current Assets	12,822	12,639	13,400	14,435	14,864
Plant and Equipment - at cost	7,435	7,645	8,075	8,575	9,365
Less Depreciation	(3,608)	(3,658)	(3,708)	(3,758)	(3,808)
Other Assets	450	393	391	384	311
Total Assets	17,099	17,019	18,158	19,636	20,732
Liabilities					
Accounts Payable	800	900	1,350	1,350	900
Accrued Liabilities	1,141	691	837	1,237	1,432
Federal Income Tax	1,624	1,397	1,170	1,755	2,340
Total Current Liabilities	3,565	2,988	3,357	4,342	4,672
Deferred Income	549	586	622	659	695
*New Loans	-	-	274	-	-
Reserve for Contingencies	500	500	500	500	500
Net Worth					
Capital Stock	2,500	2,500	2,500	2,500	2,500
Surplus	9,985	10,525	11,065	11,875	12,685
Less Cash Dividends	-	(80)	(160)	(240)	(320)
Total Liabilities and Net Worth	17,099	17,019	18,158	19,636	20,732

*New Loans is balancing figure to maintain cash at minimum balance.

EXHIBIT 2

winter season due to promotion of three basic credit plans, generally referred to as floor plans, longer terms and tonnage payments. They are as follows:

Floor Plans — We make shipments of machines to our distributors during slack seasons, requiring payment to be made either when a sale is consummated or three to four months from date of shipment on an installment plan basis, whichever is the earlier. Discounts are allowed if total payments are made on or before due dates of the installments and interest is charged if not paid by due dates.

Longer Terms — We increase the length of time before a note is due, either on a single-payment or on an installment plan.

Tonnage Payments — Under this plan, a certain dollar amount is payable based on each ton of material handled.

Cash collections include not only collections from normal sales but the collections of royalties, engineering fees and dividends from affiliated or subsidiary companies, interest on notes receivable, and other miscellaneous

income items. In addition, the cash made available through long and short-term loans must be included.

Payment of Liabilities, Inventory Change; Plant and Depreciation

The payment dates of suppliers invoices, payrolls, profit-sharing plans, pension plans, plant expansion programs and Federal income tax should be scheduled. We consider it generally desirable if cash is available to pay on a 10-day basis, especially when discounts are involved. For our cash budget, we consider all suppliers' invoices to be on a 10-day basis and figure payments for a given month to be one third of the previous month's purchases and two thirds of the current month's purchases. All of our payrolls are considered to be distributed equally throughout the budget periods, even though paying our factory payroll every two weeks may cause them to fall unevenly in the budget periods. We feel that the variation which results is not significant. Our pension plan premium payment is a substantial figure and the date for this payment must be scheduled. Federal income tax payment dates must be scheduled, along with payments for contractor's invoices for the work completed in an expansion program.

In a seasonal business such as ours, it is necessary to plan for inventory increases during certain months of the year and on decreases during other months. During the period of low shipments, from October throughout February, management must decide on the level of production which is to be maintained. The desire to maintain a stable working force with relatively steady hours of work and the degree of risk which management is willing to assume in order to be prepared for heavy demand during the construction season, are prime factors in this decision. Having decided on an optimum level of production and assuming the sales volume already estimated, it is quite simple to determine the inventory increase and later decrease. We do this by taking the difference between production volume and shipment volume and then converting the sales value of the difference to cost through use of an average gross profit percentage. Inventory requirements for new plants must be determined and allowances for them included in the cash budget.

Plant expansion programs usually run for a period from one year to several years. This type of expenditure requires a great deal of planning, not only for the program itself but for the cash requirements. The timing of construction of buildings and the delivery dates of machinery must be carefully scheduled so that, when the invoices are submitted from the contractors or suppliers the cash will be on hand. To assist in the preparation of our budget,

CASH BUDGET - APPLICATION OF FUNDS

(Thousands of dollars)	Quarter Ended - Nov. 30, 1956	Feb. 28, 1957	May 31, 1957	Aug. 31, 1957
Funds Provided by:				
New Loans		274		
Net profit before Tax	1,125	1,125	1,688	1,687
Decrease in Accounts Receivable	622			
Decrease in Inventory - Plant I			300	300
Decrease in Other Assets	57	2	7	73
Increase in Accounts Payable	100	450		
Increase in Accrued Liabilities	97	269	577	396
Increase in deferred income	37	36	37	36
	2,038	2,156	2,609	2,492
Funds Applied to:				
Repayment of Loans			274	
Increase in Notes Receivable	100	100	100	100
Increase in Accounts Receivable			800	
Increase in Inventory - Plant I	800	800		
Increase in Inventory - Plant II			300	500
Increase in Other Assets				
Purchase of Plant & Equip. - Plant I	50	50	50	50
Purchase of Plant & Equip. - Plant II	160	380	450	740
Less Depreciation	(50)	(50)	(50)	(50)
Decrease in Accounts Payable				450
Payment of Cash Profit sharing	61	54	54	61
Payment of profit sharing savings	56	54	72	81
Payment of profit bonus	385			
Payment of local taxes			36	24
Payment of accrued donations	45	15	15	15
Income Taxes	812	812	293	292
Dividends	80	80	80	80
	2,499	2,295	2,474	2,363
Excess Funds Provided (Applied)	(461)	(139)	135	129
Cash - Beginning of Period	1,600	1,139	1,000	1,135
Cash - End of Period	1,139	1,000	1,135	1,264
Increase (decrease) in cash position	(461)	(139)	135	129

EXHIBIT 3

we plotted, by fiscal year quarters, the proposed scheduling of payments for the expansion program.

The method of depreciation used for tax purposes is important in a cash budget. The faster write-off allowed by the Government under the new declining balance method and the sum-of-the-digit-method will give a quicker return of working capital. We use the declining balance method on buildings because no salvage value is required. On the other fixed assets, we have found from experience that salvage values are insignificant. This combination of methods gives us the quickest return of working capital under the presently allowed methods of depreciation.

Usefulness of Application of Funds Statement

At the same time the balance sheet is being prepared for the cash budget, we also prepare an application-of-funds statement. We find that carrying through both statements simultaneously helps to spotlight changes and provides a check on the accuracy of the compilation of the figures.

Assumptions and Resulting Budget Statements

To further illustrate the pre-requisites for preparing a cash budget, Exhibit 1 shows the various assumptions it was necessary for us to make. From these assumptions the Cash Budget Balance Sheet (Exhibit 2) and Application of Funds Statement (Exhibit 3) have been prepared. Although figures are hypothetical, they are typical for a business of our type.

The length of the budget period depends on several factors, including the purpose the cash budget is to serve, the financial condition of the company, and the opinion of management as to the practicability and accuracy of estimating. Should the cash balance be low, an estimate of cash receipts and disbursement may be necessary on a weekly, or even a daily basis. However, a firm with ample cash may develop a cash budget by quarters, by six month periods, or by years, whichever is considered necessary. Each company will have to establish its own budget periods according to the desires of top management.

DON'T FORGET THE BALANCE SHEET

by L. H. Brewster, Jr.

In their advance to new responsibilities, accountants must not forget that the round of progress is by way of complete discharge of the old ones. The purpose of periodic financial statements of a company is to furnish information necessary for the formation of dependable management decisions. How do the various items appearing on your balance sheet meet this test?

Take quick assets first. Certainly management wants to know that the cash figure is correct and reflects funds which are intact as reported. They, too, want to know that adequate internal controls for the protection of these funds are set up and functioning. Management wants to be sure that the figures for government and other marketable securities figures represent quickly realizable values protected by adequate reserves for any contingencies of shrinkage

or loss. Accounts and notes receivable are a basic source of funds and must be amounts which are sound and realizable in the company's experience, with adequate reserves for bad debts.

Inventory valuation may be the field of technically trained sales and production men, but it is the responsibility of the accountant to know that the pricing and record-keeping techniques are sound and accurate. All "frozen" or obsolete inventories should be at realizable values. After the things that have happened to many companies, the accountant should assure himself personally of the existence of all inventories.

The investments and advances reflected in the plant and property accounts are due for more than ordinary consideration. In many cases, today, the solvency of a company depends very heavily upon its ability to modernize its equipment so as to improve the productive capacity and quality of its products. Rates of depreciation must be soundly consistent with usage of equipment. Management wants to know, in some clear way, that provision for replacement is reflected in accounting for fixed assets, all conventions to the contrary notwithstanding.

Of those charged with insurance coverage, management wants to be sure that they have a full understanding of the costs of replacement of covered items. The accountant and management should work very closely in this matter. Figures presenting deferred charges, franchises, patents and the like should also be arrived at through close coordination with management. They should represent values which allow no room for priming and cover only the period during which these items are of benefit.

Let us take a look now at what management is going to expect liabilities to reflect. They will want to be sure that the figures shown for accounts payable, notes payable, accrued taxes, and reserves are marked with the correct price tag. It is not so much a matter of whether accruals and reserves are charged against income or surplus, but rather that they take their proper place in reflecting the financial performance of a company.

Management will want to know that the capital stock and bonds are properly supported by records of issue and valuation, that all laws governing these elements are being complied with and that these vital records are in proper and trustworthy custody. They must know the various designations of surplus are in keeping with realistic accounting conventions, that their values are sound, and logically supported by company history. They must also know that reporting conforms with the requirements for disclosure to stockholders, the public and governmental agencies.

The real answer to better and more useful reporting is the will and determination by both the accountant and management to do a better job of public relations and education with each other. It is in this atmosphere that there will be found a place for both the progressive executive and the thoughtful accountant.

A Start on Forward Planning the Accounting Staff

by RICHARD N. MASIMORE

MUCH HAS BEEN WRITTEN to guide the industrial financial staff in its technical functions. However, much less information is available on how to select individuals for the staff and encourage their development. The prime responsibility of the financial staff is in providing data to guide management to sound and profitable decisions. This staff must identify and provide control media for the elements of income and expense, provide and interpret historical costs, predict cost trends, point up problems in control of scrap and obsolescence, determine methods of financing, and supply analyses for cost reduction or make or buy decisions. Can it be doubted that it is necessary to develop individuals to meet these various and comprehensive responsibilities? In the following paragraphs we shall discuss one method of obtaining these goals.

The Opening—What Does It Call For?

When an opening on the financial staff occurs, the first step is to analyze the responsibilities and functions of the position to determine what skills or experiences are required. In addition, we take a look at the logical path the occupant of this position could follow and look for other qualities that would tend to fit the man to the organization. The job description in the organization manual is an all important aid at this point, as it delineates responsibilities and identifies the techniques and qualifications required for job performance.

Recruitment—Within and Without

The next step is to fill the position. How shall we find the right man? Assuming we have been well-organized with depth to each position, the selection should be easy. However, promotion within the organization is not always possible. Still it is one of the many methods of recruiting. It is not the intent of the writer to deal with the various types of hiring as such. However, in

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RICHARD N. MASIMORE is Procedure Analyst at Solar Aircraft Company, Des Moines, Iowa, and has been associated with this company since 1948. Previous to his present position he was Supervisor of Payroll and Cost Recording. Mr. Masimore is a previous contributer to the *Bulletin*.

JOB DESCRIPTION

JOB NAME: SENIOR COST ACCOUNTANT — **DIVISION:** Financial
SUPERVISOR: Administrative Cost Accountant — **DEPARTMENT:** Cost Accounting

PURPOSE: To prepare monthly closings and cost analyses, reports and progress billings; to assist in planning and following up the work of Cost Department personnel in the maintenance of various cost records and performance of other duties.

DUTIES: Perform one or more of the following duties designated by supervision:

1. Apply cost of sales invoices; prepare cost of sales journal entry.
2. Prepare labor distribution journal.
3. Prepare monthly journals and reports related thereto.
4. Prepare monthly report of cost and backlog on all development contracts.
5. Issue daily labor report with assistance of subordinates.
6. Responsible for project cost accumulations and supervision of activities in recording.
7. Responsible for cost accumulation of tooling, appropriation requests and factory work orders and issuing related reports.
8. Prepare manufacturing order aging report and follow up for closings.
9. Responsible for materials pricing of requisitions and stores charges and transfers performed by subordinates.
10. Plan and assign work of personnel under his supervision.
11. Prepare special cost analysis as required.

SUPERVISION: Works under general supervision; refers unusual problems to immediate supervisor; assists in training and direction of subordinates.

QUALIFICATIONS: Education and training equivalent to graduation from high school; plus successful completion of recognized accounting course; good knowledge of theories and principles of cost accounting; five or more years of previous cost accounting experience; good knowledge of company's products and manufacturing processes; ability to plan and follow up the work of others.

EXHIBIT 1

discussing hiring policies, it is necessary to point out various methods and some of their attributes and shortcomings.

We will think first of promotion from within. There is always Mr. Smith who has been "wed" to the raw material inventory for the last six years. Is he so steeped in detail that he does not grasp the over-all importance of financial staff functions? If so, he may not be prepared for greater responsibility. It is here that we must step back and take a look at the importance of Mr. Smith's previous assignments with the company. What does he know? Has he made suggestions to improve his own work? Does he have initiative? Is he well liked? Does he have imagination? Is he dependable? Does he exercise good judgment? We cannot afford to assume that Mr. Smith knows nothing more than the limits of his job's description because, in so doing, we might be letting our best replacement continue to perform in a function he has long since outgrown.

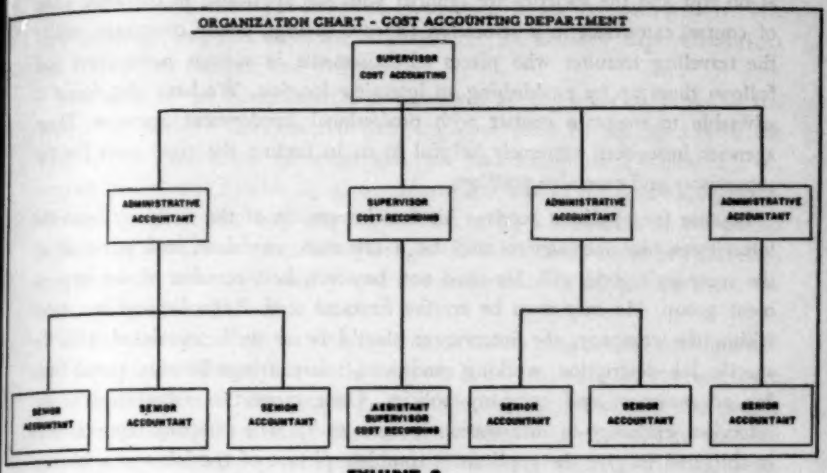


EXHIBIT 2

To make sure that we fully recognize the strengths and weaknesses of our employees we have instituted a semi-annual performance review. This deals with the following traits:

1. Knowledge
2. Judgment
3. Dependability
4. Initiative
5. Attitude
6. Leadership
7. Delegation of duties
8. Outstanding characteristics
9. Limitations

The supervisor is asked to comment on the principal attributes or limitations of the employee which contribute to present job performance and would be significant in considering him for promotion. He rates the employee on the above elements on the following scale:

Inferior	1	Average 3	Above average 4
Below average	2		Superior 5

The performance review is discussed with the employee and areas which indicate a need for improvement are stressed. The review is not used as a justification for salary increases. Salary review is based on a separate evaluation. The sole purpose of the performance review is to assist the supervisor in evaluating performance and development potential. It provides a bank of information on our employees to be used when openings occur.

Then, if we cannot find a replacement within the company, we turn to recruiting. This task can be approached in various ways. One of the methods utilized is the employment services offered by the technical societies in which our financial staff may hold membership. Their services are generally rendered

at no cost and the societies are familiar with job applicants in the area. This, of course, can result in a relocation expense savings. Many companies utilize the traveling recruiter who places advertisements in various newspapers and follows them up by establishing an interview location. We have also found it advisable to maintain contact with professional employment agencies. These agencies have been extremely helpful to us in finding the right man for the supervisory and executive positions.

Because the applicant receives his first impression of the company from the interviewer, the interviewer must be a salesman, confidant, and purveyor of the company's good will. He need not, however, be a member of the employment group. He may even be on the financial staff. Regardless of his status within the company, the interviewer should be as well acquainted with the specific job description, working conditions, salary, fringe benefits, possibilities for advancement and company policies. Once rapport is established at the interview, exchange of information is made easily. The company representative is obligated to give the applicant a complete picture of the job and encourage him to disclose his ambitions, as well as his capabilities. Various samples of company literature should be made available to the applicant, including the annual report, employee newspaper, company house organ, and sales brochures which describe the company's operations. This will give the applicant something tangible to study following the interview. A sale should be made in both directions—the company on the prospect and the prospect on the company.

When we select an applicant for further interview, we utilize the formal interview technique with the department manager concerned followed by an informal luncheon with three or four financial staff members. The luncheon interview provides an opportunity for obtaining a pool of opinions regarding the applicant. It offers the applicant an introduction to his associates, with an opportunity for casual discussion of a variety of subjects about the community, including the schools, housing, entertainment and recreational facilities, transportation, etc.

Providing Complete Orientation

Once hired the introduction of an employee to fellow workers is an important aspect of his establishment in the company. He is given a personal tour and introduced to the plant manager, division managers and his working associates. An introductory bulletin is circulated to each department of the company. This carries the picture of the newcomer and information about previous work experience, his family and hobbies. It is this type of added personal touch

that lets the new employee know he is welcome in the company family. The new employee may feel awkward and tense for the first few days. Co-workers can, with a little thought, ease this tension.

The tools of an administrative position are as important as those of the production worker. The financial staff employee must be equipped with the tools of his profession. He must have his job description (Exhibit 1), an organization chart (Exhibit 2) of his department and of the over-all organization and he must also have the chart of accounts, a statement of accounting policies and the written procedures through which his efforts are to be channeled. Supplied with these tools and given clear understanding of his functions, the new employee has a base from which to work.

We have also established a four-day indoctrination program for new financial staff supervisors. The purpose of the program is to familiarize the new employee with the objectives of the company, its products, organization and the people who are responsible for the direction of the company's efforts. The program is held away from the plant during regular working hours and includes the following subjects:

1. Company organization
2. Planning for production
3. How the company business is financed
4. How we obtain business
5. Functions of quality control
6. Functions of production
7. Functions of production engineering
8. Labor relations
9. Safety
10. Public relations
11. Industrial medicine and hygiene
12. Personnel counseling
13. Functions of accounting
14. Functions of industrial engineering

These subjects are presented by the various department managers responsible. As mentioned earlier, the financial staff employee must be conversant with many facets of the operations. Consequently, such a broad orientation can be extremely beneficial to him. In brief he is told "who's on first," how he got there, and where he is going from there.

Staff Training

Now that the staff member is hired and well-informed, we continue with his development within the company. As previously mentioned, we believe in depth—by that we mean that each major position has a man or two in training to fill it. This training, by and large, is done informally and sometimes even without the man knowing he is being groomed. However, more often than

not, we do advise the employee of possible future steps and how he can be developing himself for these positions. Following are some of the steps which can be taken to develop the employee:

1. *Job rotation*—Change the employee from job to job within the department or even within the company. Take advantage of special assignments where others are on vacation. Rotate the job of conducting various departmental meetings.
2. *Professional organization*—Encourage active membership in at least one professional organization.
3. *Formal training*—Conducting periodic training programs after the initial orientation and encouraging employees to take night courses at universities or adult education classes, wherever it will benefit the employee in relation to his work.
4. *Staff meetings*—Employees need to be informed. Departmental meetings are held from time to time to communicate and disseminate information. Communication can be a problem and nothing can affect the morale of the staff more rapidly than poor communications.
5. *Civic affairs participation*—Activity here not only benefits the community in which we live and work, but it develops the employees also.

Although communications and morale have been mentioned only briefly, it certainly has not been the intention to de-emphasize these two points. They are important factors in developing and retaining good employees. They go hand in hand. If you have good communications within your department and company, the chances are that the morale factor will be favorable and, conversely, if the morale factor is high chances are your company has good communications. We mean communication in all directions, upwards, downwards, and laterally.

Acquiring Abilities—and Extras

The concepts of integrated data processing that we hear so much of today can be applied to the financial staff. By encouraging development and developing potential, we can, with planning, direction and forward thinking, integrate the desired qualities and acquire the extras that usually demand premium payment. In doing so, we develop better employees and a more qualified financial staff for producing and interpreting decision data. We also contribute to human relations, the science of dealing with people.

A Method of Controlling Company Construction Costs

by JOHN S. KING

THE MANUFACTURING CONCERN which constructs its own buildings and other facilities needs standard costs just as much for such operations as for its manufacturing operations. Here, too, effective control of total cost can only be accomplished by control of the cost of individual measurable units. These measurable units should be established before the estimates of the project are completed and should be used as a basis for preparing the estimates. For building construction, some of the logical major units are excavation, concrete substructures, concrete superstructures, reinforcing steel, structural steel, etc. The system described is designed for use by a manufacturing firm which performs its own construction. However, the same guiding principles apply to construction contractors and the system can be easily adapted to general use. A modified form of flow chart (Exhibit 1) shows a typical project from the conception to the completion of the work.

MODIFIED FLOW CHART OF TYPICAL CONSTRUCTION PROJECT

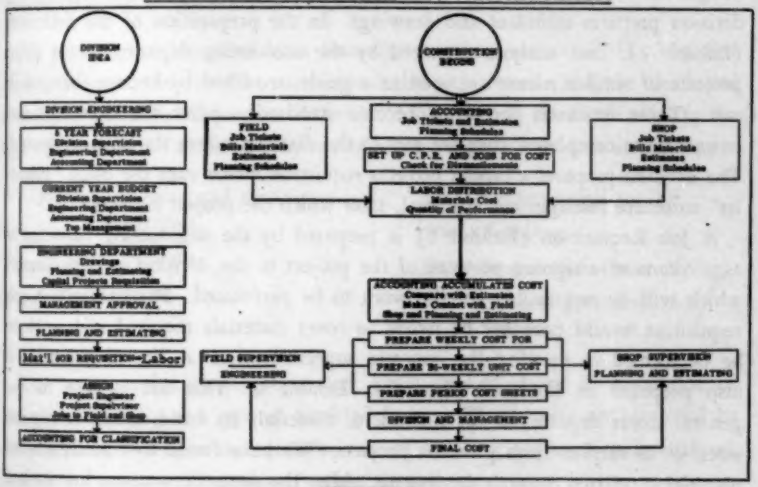


EXHIBIT 1

JOHN S. KING is an Accountant in the Construction Cost Section of the Accounting Department, Tennessee Eastman Company. Mr. King has been affiliated with Tennessee Eastman Company since 1950.

JOB ESTIMATE

CPR NO. _____ JOB NO. _____ SHEET NO. _____

ESTIMATE REQUEST NO. _____ DRAWING NO. _____ BUILDING NO. _____

DESCRIPTION OF WORK

WORK PROCEDURE AND METHODS USED IN PREPARING THIS ESTIMATE

DESCRIPTION OF MATERIALS & LABOR	MATERIAL EXTENSION				LABOR EXTENSION		
	QUANTITY	UNIT	UNIT PRICE	VALUE	HOURS	SHOP-BURDEN	COST BURDEN
TOTAL	—	—	—	—			

TOTAL ESTIMATE

PREPARED BY _____ DATE _____ CHECKED BY _____ DATE _____

APPROVALS

DEPARTMENT SUPT _____ PROJECT ENGINEER _____

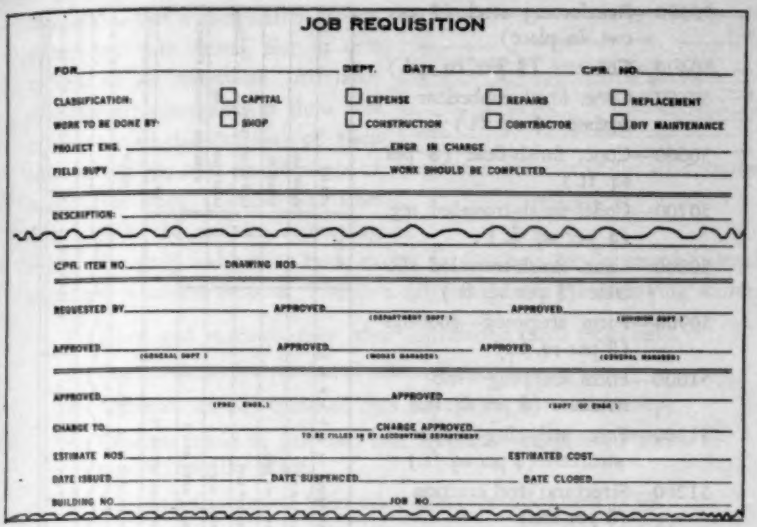
DIVISION SUPT _____ SUPT ENG. DIVISION _____

EXHIBIT 2

Basic Media for Planning Construction

In this paper we are not concerned with the capital budget. It is after the budget has been approved, that the detailed planning begins. The engineering division prepares estimates and drawings. In the preparation of the Estimate (Exhibit 2), cost analyses prepared by the accounting department for prior projects of similar nature are used as a guide, modified by known changes in cost. These estimates thereafter become standards. After the drawings and estimates are completed, they are sent to the division where the idea originated. The division prepares a capital projects requistion which runs the usual "gauntlet" to secure management approval, after which the project is started.

A Job Requisition (Exhibit 3) is prepared by the engineering department as a means of assigning portions of the project to the division or departments which will be responsible for the work to be performed. For example, a job requisition would probably be issued to cover materials required and work to be performed in erecting the concrete superstructures. A list of materials is also prepared in the form shown as Exhibit 4. This list is sent to the general stores department for a check of materials on hand, either in regular stock or as surplus from previous projects. We have found that much surplus material is utilized through this system. After the stores department has marked the list for materials on hand, it is sent to the procurement department. The project and job numbers appear on all purchase orders for easy identification and classification. The job ticket (Exhibit 5) condenses the requisition.



JOB REQUISITION

FOR _____ DEPT. DATE _____ CPR. NO. _____

CLASSIFICATION: ☐ CAPITAL ☐ EXPENSE ☐ REPAIRS ☐ REPLACEMENT

WORK TO BE DONE BY: ☐ SHOP ☐ CONSTRUCTION ☐ CONTRACTOR ☐ DIV. MAINTENANCE

PROJECT ENG. _____ ENGR. IN CHARGE _____

FIELD SUPV. _____ WORK SHOULD BE COMPLETED _____

DESCRIPTION: _____

CPR. ITEM NO. _____ DRAWING NOS. _____

REQUESTED BY _____ APPROVED _____ APPROVED _____

(DEPARTMENT SUPT.) (DIVISION SUPT.)

APPROVED _____ APPROVED _____ APPROVED _____

(GENERAL SUPT.) (WORKS MANAGER) (GENERAL MANAGER)

APPROVED _____ APPROVED _____

(PROJ. ENGR.) (SUPT. OF ENGR.)

CHARGE TO _____ CHARGE APPROVED _____

TO BE FILLED IN BY ACCOUNTING DEPARTMENT

ESTIMATE NOS. _____ ESTIMATED COST _____

DATE ISSUED _____ DATE SUSPENDED _____ DATE CLOSED _____

BUILDING NO. _____ JOB NO. _____

EXHIBIT 3

Accumulation of Costs and Preparation of Statements

All projects are identified by a four-digit number, such as 1701. The first digit represents the division, the second the year issued, and the third and fourth the numerical sequence. A further breakdown is shown to identify the type of construction or services by use of a three-digit job number as follows:

100—Enginering and machinery installations.

200—Instruments.

300—Electrical.

400—Underground piping

500—Building.

600—Process and service piping.

700—General furniture and fixtures.

The above major classifications are again broken down in smaller units indicating the class and type of work performed. These units are identified by five-digit numbers. For instance, the cost of building construction is analyzed beyond the primary 1701 identification, as follows:

50000—Excavation ($ per cu. yd.)

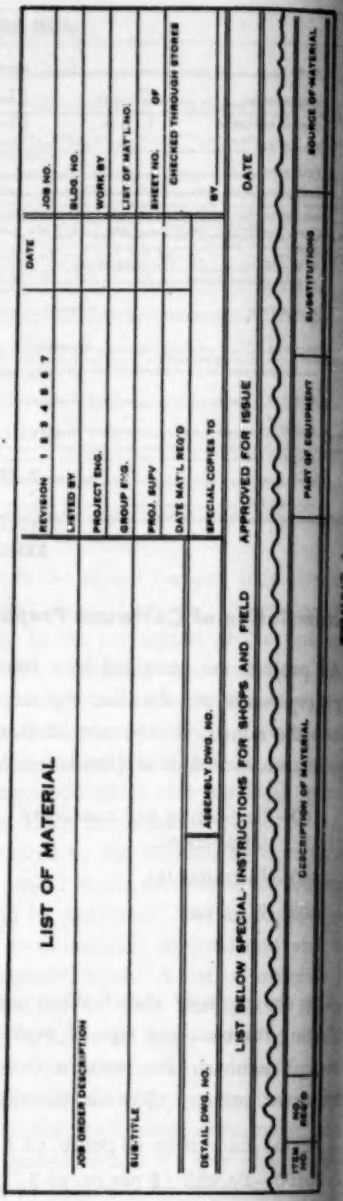
50100—Backfill ($ per cu. yd.)

50200—Formwork ($ per sq. ft. of contact area)

50300—Reinforcing steel ($ per cwt. in place)
50400—Concrete ($ per cu. yd.)
50500—Conc. finish-rubbed or washed ($ sq. ft.)
50600—Conc. finish-float ($ per sq. ft.)
50700—Conc. finish-troweled reg. ($ per sq. ft.)
50800—Conc. finish-troweled silicrete ($ per sq. ft.)
50900—Form stripping—footings ($ per sq. ft.)
51000—Form stripping—substructure ($ per sq. ft.)
51100—Form stripping—superstructure ($ per sq. ft.)
51200—Structural steel erection ($ per ton)
51300—Structural steel bolting—($ per bolt)
51400—Structural steel riveting—($ per rivet)
51500—Common brick structure—($ per M-brick)
51600—Concrete block structure—($ per C-block)
51700—Glazed tile structure—($ per C-tile)
51800—Glass block structure—($ per C-block)

The last two digits (zeros above) are used for sub-jobs which can be written to cost any portion of a job, the codes being 0 through 49 for shop work and 50 through 99 for field work.

The job ledger sheets are set up by the code numbers. This is done by a punched card system. The estimates are set up on these ledger cards by job



numbers so that a comparison of estimated cost with actual cost to date appears on all statements. All labor estimates are segregated to show cost of nine craft classifications of shop labor and fifteen craft classifications of construction labor (Exhibit 6). Cost data flows to the machine accounting section on a daily and weekly basis, except for vouchers for purchased materials which are processed as paid. The data originates from the following sources:

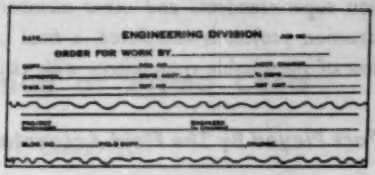


EXHIBIT 5

1. Labor and burden—daily labor distribution cards from field.
2. Commitments for purchased material—purchase orders.
3. Materials issued—punched card requisition from stores dept.
4. Concrete made in our own mixing plant—distribution sheets received from the plant.
5. Materials transferred from other jobs—punched card ticket.
6. Cost of heavy equipment used—usage distribution from field.

From the accumulated cost data, a number of statements are issued. Each Monday a statement is issued for each job showing actual cost of labor incurred by crafts, estimated cost of labor by crafts and actual and estimated cost of purchased materials and equipment. The statement is distributed to the project engineer, project supervision, field supervisor and the project planning group. The statement shows clearly the progress of the job and, if expenses have been incurred in excess of the estimate, discloses where the excess cost has been incurred. Four-week period cost statements are issued in summary form by jobs and show totals for labor by craft, materials, commitments incurred, estimated cost and balance remaining. These statements are distributed to divi-

LABOR NO. 57-2-14

DO NOT KEY PUNCH DESCR.	CLASS CODE	REFERENCE YEAR & PD.	JOB NO.	AMOUNT	CLASS CODE	HOURS	UNIT	DESCR.	SUB CLASS CODE	CARD CODE	DIV. CODE
		57 2nd	1701-101	XII	63	10	Hr.	Shop	021	7	2
		" "	" "	XXXX	"	420	"	"	002	"	"
		" "	" "	XIX	"	120	"	"	047	"	"
		" "	" "	XXX	55	160	"	CONST.	001	"	"
*ENGR.	51										
SHOP	53										
CONST.	55										
OPNS.	57										
NO DTL.	59										

The example set forth shows how labor estimates would be prepared for machine accounting. Estimates for material are in similar form.

EXHIBIT 6

sion superintendents and other members of top management. When the construction project is completed, a final cost statement is issued, comparing unit cost of measurable components with estimates and previous projects.

Part Played By The Field Accountant

In order to maintain continuous control of construction cost, we assign a field accountant, either on a full or part-time basis to each of our capital projects. This man must be in constant contact with the construction operations in the field and is responsible for the accurate accumulation of cost. His first duties are to supply the basic information about the project to the machine accounting section. He is responsible for developing the necessary details of the estimated cost of the project to be shown on the job ledger sheets which have been described. After construction starts, he must ascertain that all charges are properly made. The quantities of materials used are reported to him by the field forces and he must check these quantities to the cost statements and investigate all differences. We have found that the knowledge gained in the field by the accountant adds greatly to the accuracy of the statements issued.

The unit cost developed for various phases of construction work provides an excellent indication of the reasonableness of costs incurred, especially when comparisons with similar projects are available. It is also a valuable guide in preparing estimates for future projects. A unit cost program can be employed wherever a satisfactory measure can be established.

System Tested In Use

We have used the system described above for some years now and feel that it has produced excellent results in cost savings. We have accumulated valuable analyses of various types of construction, with the result that we have improved the accuracy of our estimates for new projects. Our construction personnel appreciates the cost data furnished them and is gradually becoming more and more cost conscious.

Cost Reduction Aimed at Prime Costs

by CHESTER A. LAKEFIELD

THIS PAPER WILL DESCRIBE the cost reduction program in operation at the St. Joseph (Michigan) Division of Whirlpool Corporation, manufacturer of major appliances. The St. Joseph operation consists of approximately 2300 employees and around 1,000,000 square feet of floor space. Because the appliance industry is a highly competitive one, reduction of cost is a necessary and vital function. Our objective is to produce goods of highest quality and customer utility while constantly improving the economy of manufacture. The term, cost reduction, as used here, refers to reduction of product cost, i.e., of the cost of labor, materials, and component parts through engineering refinements, manufacturing improvements, and economies in purchasing.

Essentials and Organization of the Program

Before initial production, many agencies, including engineering, tool design methods, and plant layout, are at work to provide a cost as close as possible to minimum. However, our topic is in the phase of cost reduction which occurs after initial production, in the continuous scrutiny and review of all the constituent elements of product cost. Our program has been useful, not because it is unusual or new in concept but rather because it is basic and has become integrated into the management function. There are certain fundamentals which, from our experience, encourage the best results. The first of these emphasizes quality improvement. It is a fundamental policy of this company to produce goods of outstanding quality. Cost reduction projects are selected rigidly on the basis of the product quality objective. Thus, cost reduction should:

1. Emphasize the improvement of product quality.
2. Have impetus from management.
3. Be a continuous and a planned program.
4. Be an integral part of management activity and be considered a regular departmental function.

C. A. LAKEFIELD is Division Controller of the St. Joseph Division of the Whirlpool-Seeger Corporation, St. Joseph, Michigan. Mr. Lakefield has been associated with this Company since 1950.

COST REDUCTION GOALS FOR 1957

Engineering Dept. $____ Purchasing Dept. $____ Manufacturing Dept. $____

Notes

1. Goals are based on prime cost. (Labor and material)
2. Goals are based on production schedule of ____ units for the year.
3. Forecasted savings require the following capital and tooling expenditures:

	Capital	Tooling
Purchasing	$	$
Engineering	$	$
Manufacturing	$	$

EXHIBIT 1

5. Be carried on as a primary activity and not as a fringe activity.
6. Be strengthened by an adequate system of communication and reporting.
7. Be a teamwork job.

These ideas stress the reduction of cost as a continuous cooperative management job and a part of the comprehensive management objective and responsibility. The emphasis on quality is a transcendent consideration and improvement of quality is inherent in clarity of design, in automaticity in production, in the use of materials and service.

COST REDUCTION LOG - March - 1957

Code Number	Description of Proposed Savings	Estimated Savings Per Unit	Department Responsible	Assigned Completion Date

EXHIBIT 2

Our cost reduction program is segregated, departmentally, into the three

QUARTERLY COST REDUCTION SUMMARY - Purchasing Department

Month	Increase	Decrease		Months in Effect	Cumulative Increase	Cumulative Decrease
January	$	$		3	$	$
February	$	$		2	$	$
March	$	$		1	$	$
			Totals		$	$
			Net Savings			$

Note: 1. Includes all price increases and decreases extended by quantities of materials and component parts procured each month.
2. Savings reported above required $____ in tooling cost.

EXHIBIT 3

major groups involved in the improvement of product cost in a manufacturing unit: engineering, purchasing, and manufacturing. The first step in the program is the establishment of annual cost reduction goals. Each department estimates, for the coming year, its contribution to the total cost reduction effort. The estimate then becomes a goal to be used as a measurement of performance. Each department is organized and managed, as a part of its regular assignment, to carry out the cost reduction plan. The annual estimate includes cost-saving projects planned for the year, converted into dollar totals based on anticipated production volume. Estimates are made also of tooling and capital equipment necessary to achieve the goal. Such expenditures must be warranted, of course, by the resulting savings, according to prescribed rules. Each item, when reviewed and authorized, becomes part of the annual goal. A sample summary of cost goals is given in Exhibit 1.

Reports issued during the year to record the status of the program include a log of cost reduction ideas in progress and quarterly reports for each department and in combined total. The purpose of the monthly log is to keep each department manager informed of the projects under his control. It includes, as shown in Exhibit 2, description of each project, estimated cost per unit, department responsible, and completion date.

Departmental Goals and Reports

The background for cost reduction in purchasing is a partnership relation with vendors and suppliers. The purchasing department seeks the cooperation of the vendor in the improvement of his own operation, and in extending suggestions as to design simplification of the items purchased and methods of packaging and shipping. The success of the purchasing cost reduction program is based on these three points:

1. To promote a feeling of partnership with vendors and suppliers.
2. To encourage a desire to participate in improving our products.
3. To make a sustained effort to effect economies.

The cost reduction program in purchasing is arranged by the director of purchasing. Each buyer makes his individual contribution. The department's annual cost reduction goal purposes to reflect the net anticipated change during the year in the cost of all materials and component parts purchased. Therefore, it is based on an appraisal of the general trend in prices as well as upon the specific cost reduction projects in the department. A computation of price changes is made each month by extending each individual price change by the quantity procured. The desired net result is a surplus of decreases over increases.

The department makes this monthly computation individually for each buyer and for the department in total. Results are summarized on a quarterly basis and are subsequently included in a combined report covering the three major departments. A quarterly summary includes the total price increases and decreases for each of the three months and the cumulative result based on the number of months affected. A sample form of this report is presented in Exhibit 3. The same information is depicted graphically in Exhibit 4.

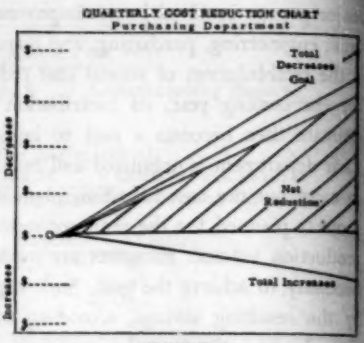


EXHIBIT 4

Cost reduction in the engineering department involves the improvement of design and simplification of manufacturing specifications. It includes both major changes in design requiring prolonged development and test, as well as less extensive changes in design, type of material, finish specifications, method of assembly, et cetera. The engineering cost reduction program is the responsibility of the chief engineer and covers the entire organization of the engineering function: development, product design, laboratory and field testing. Cost reduction in engineering also represents constant communication with manufacturing, purchasing, and vendors' representatives. The engineering cost reduction goal is determined from all of the cost savings projects under way and anticipated, both large and small, and includes items of capital and tooling cost necessary to put the projects in operation. Individual items are reported on the monthly log, as shown in Exhibit 2. Results are reported quarterly, computed on individual improvements put into effect and reflected in total as a projection of a full year's saving. A sample summary is shown in Exhibit 5.

QUARTERLY COST REDUCTION SUMMARY - Engineering Department

Engineering Department savings..... $----------

Savings are expressed in prime cost.
Savings are projected on the basis of one year's production.
Cost reduction projects reported here required the following expenditures:

Capital.....$----------
Tooling.....$----------

EXHIBIT 5

QUARTERLY COST REDUCTION REPORT - Combined Summary

	Goal	Actual Savings	% Goal Realized
Purchasing Department	$	$	%
Engineering Department	$	$	%
Manufacturing Department	$	$	%

Note:

1. Savings and goals are expressed in prime cost.
2. Purchasing department savings are computed by extending each price change by quantities of materials and component parts procured.
3. Engineering and manufacturing departments savings and goals are computed as projected over estimated production for the year.
4. Cost reduction projects reported here required the following expenditures in capital additions and tooling cost:
   (detail similar to departmental exhibits)

EXHIBIT 6

Cost reduction in the manufacturing department takes into account a broad group of functions, including tooling and methods work, plant engineering, industrial engineering, and line production. This effort is the responsibility of the works manager. Here the teamwork aspect of cost reduction is paramount and the importance of quality improvement is the controlling factor. The annual cost reduction goal of the manufacturing department provides a forecast of the economies expected throughout the year, as well as prerequisite tooling and capital investment. It includes method improvements, use of machinery, design and application of special machinery and automatic fixtures, plant layout improvement, and all of those factors that make for an ever-improving plant operation. Careful cost estimation determines the economic feasibility of each cost saving suggestion. The goal in manufacturing, as in engineering, is expressed as a projected saving over one year's production at current schedules. The reporting tools, again, are the monthly log of items in progress (Exhibit 2) and the quarterly cost reduction report. The manufacturing portion of this report is similar in form to Exhibit 5.

Summary of Savings

The final phase of reporting in this program is in the combined summary of the savings attained by the three major departments. This report is issued on a cumulative basis each quarter, with final results for the year indicated in the fourth quarter report. The combined summary gives cost reduction totals and performance against goals. The goal in each report is a proration of the

annual goal. The combined summary is presented in Exhibit 6. As in departmental reports, the amounts of tooling and capital requirements are given.

As an additional management tool, the program constitutes cost reduction as an individual area of management activity, subject to prediction, regular reporting, and to measurement. The result desired is the encouragement of cost-consciousness and elimination of waste in product cost, not only at the departmental level but on a plant-wide level. The evaluation afforded by the data shown in Exhibit 6 stresses the coordinated effort of all functions working toward a common goal.

REPLACING FORMS PROCESSING WITH DATA PROCESSING

by T. F. LONERGAN

During the past decade, there has been a growing alarm that business is becoming top-heavy with paperwork. This concern is warranted, as evidenced by increase in number of clerical workers compared to factory workers. Each original record prepared in a company requires clerical effort. The speed of processing documents from origination to disposition depends upon human effort in the first instance. When speed is of essence, it is necessary to hire more clerks for the required manual effort. This human limitation upon data processing very often affects the availability of information. Courses of action are followed which may not necessarily be best. Alternate courses of action are often not studied because it would take too long.

Company managements which are hesitating about investigating computers and related data processing equipment might be startled if they counted forms and reports in use. In any average-size company, the number of sheets of paper prepared and circulated runs into the millions each year. In most cases, information is re-copied several times by hand. Although punched card installations offer advantages over manual methods, they do not always reduce data to a common language medium at the source or origin of a clerical process. In many cases, they cannot process the data through all subsequent clerical steps without manual transcriptions. As a matter of fact, without a memory feature offered by computers, the punched card installation can become bogged down in detail and multi-operations to a degree even greater than a manual method.

If original data can be reduced to a tape or some other means and be carried forth automatically through common language machines, the following advantages can be realized:

1. More rapid processing of information.
2. Reduction in clerical expense.
3. Possibility of errors minimized.
4. Manual transcriptions eliminated.

These advantages will definitely reduce costs, expedite data processing, and better the final results. No business today can afford to ignore computer utilization.

Beyond These Covers

Books and Studies

Operations Research, Computers, and Management Decisions

Proceedings of 1957 Conference, Case Institute of Technology, 10900 Euclid Ave., Cleveland 6, Ohio, Paper Bound, 97 pages, $3.

Gathered together here are a dozen papers presented at the fifth conference held at Case University on operations research over a period of six years. Topics dealt with include relationship of operations research to computing facilities and its application in such areas as "product allocation in a changing market," "empty freight car distribution" and more general management applications.

Supervising Responsibility and Authority

Chester P. Evans, American Management Association, 1515 Broadway, New York 36, N. Y., Pamphlet, 1957, 64 pp., $3.

The result of a survey (and indentified as Research Report No. 30) as to the location of specific types of responsibilities and authorities in a group of first-line foremen and higher management personnel in four industrial plants, this pamphlet contains a number of revealing tables but leans also toward material which tables cannot express, i.e., informal comment and other indications of attitude. The survey is described as having been limited and exploratory and is presented as such rather than as a "definitive."

Motion Economy and Work Measurement

Robert Lee Morrow, The Ronald Press Co., 15 East 26th St., New York 10, N. Y., Second Edition, 1957, 468 pp., $7.50.

An expansion as well as a revision, this text deals comprehensively and in a balanced way with the techniques that underlie completely engineered standards. The author devotes chapters to such topics as "analysis of office methods," "filming the operation and film analysis," "fatigue in industry," "time study procedure, leveling and rating," "the interruption study" and "work sampling"—among the more than thirty chapters of which the book is composed. "Union-management cooperation" is also a chapter topic.

Work Sampling

Ralph M. Barnes, John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y., 2nd Edition, 283 pp., 1957, $7.95.

From time to time, work sampling is drawn to the accountant's notice as a basis for time standards or as an engineering, systems, or control tool in factory and office. Here is a book which, along with considerable explanation, describes the use of work sampling in many applications, among them "work sampling of the supervisor's job," "how school teachers use their time," and one study of direct labor and two of indirect labor. The latter relate to a warehouse handling group and to allowances for trucking and setup performance.

Tax Effects of Operating as a Corporation or Partnership

Houstin Shockey and Henry W. Sweeney, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1957, 321 pp., $8.50.

Preceded by an eight page "pre-preface" entitled "in what form should a business operate?", this book is designated in its conventional preface as intended "to disentangle the labyrinth of Federal income tax laws and regulations that govern the tax consequences of operation of corporations and partnerships." The text is of a readable character, using but not obtruding case references. Among other topics, the use of multiple business forms of operation and

the formation of corporations are dealt with.

Taxation of Life Insurance

Bertram Harnett, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1957, 296 pp., $6.50.

A book in law and life insurance, and as thoroughly involved with taxation as its title indicates, this work has little relationship to accounting as such. There are, however, relevant chapters with accounting and tax angles, such as "deductibility of insurance costs" (including deduction as "ordinary and necessary business expense"), "valuation of life insurance policies and annuities," and "income and deduction aspects of business life insurance."

Articles

Never Over-estimate the Power of a Computer

Ralph F. Lewis, Harvard Business Review, September-October 1957.

One of the points made here, which may arouse debate, is "don't switch established tabulating routines to the computer." The point is one of four principal "don'ts" in a paper of some length directing attention to need for intelligent rather than copy-cat decisions to install electronic equipment.

Profit Performance Measurement of Division Managers

Joel Dean, The Controller, September 1957.

The "requirements for profit center performance measurement" occupy a central place in this practical paper by a well-known economist. The same section of the article, proceeding from "profit center boundaries" and "economic transfer prices," reaches "measurement of profit contribution" in "current profitability," "growth" and "executive development" areas.

Marketing Costs and Mathematical Programming

William J. Baumol and Charles H. Sevin, Harvard Business Review, September-October 1957.

"How is management to find out what the different parts of the firm's marketing process contribute to its costs, its profits, and its sales?" This article, dealing with the foregoing problem, both approaches the problem as such and suggests possible applications of linear programming to it.

We Solved Our Analysis Problem

Anthony R. Carbone, The Controller, September 1957.

This is, in essence, a case study in reporting what the sales manager, production manager, budget director and the accounting department, itself, needed by way of sales information in a toy manufacturing company and how the information was provided through use of a variety of equipment and procedures, which are described in some particular.

Strategies for Diversification

H. Igor Ansoff, Harvard Business Review, September-October 1957.

"A product-market strategy—is a joint statement of a product line and corresponding set of missions (in the military sense) which the products are designed to fulfill." This quotation from the present article, combined with another, "diversification—calls for a simultaneous departure from the present product line and present structure," suggests the broad viewpoint of this paper, which covers motives and methods of diversification.

Financial Reporting and the Tax Law

James J. Mahon, Jr., New York Certified Public Accountant, September 1957.

There's topical coverage of pros and cons in several areas of divergence between tax and conventional accounting in the pages of this article. Among these topics are depletion, foreign income, and loss carryover.

Statistical Theory as An Aid in Testing Perpetual Inventory Records

Gregory M. Boni, New York Certified Public Accountant, September 1957.

Because this is a case in auditing, it should not be mistaken for application of

statistical techniques to the system of control underlying stock records. However, as a case in sampling, it has acknowledged relevance to the employment of this technique in accounting processes generally.

The Mechanics of Registering Students

Paul A. Walgren, The Controller, September 1957.

An outstanding instance of the use of mark-sensing of tabulating cards in reducing the cost of student registration at the University of Southern California is detailed here as a procedure applicable to cost reduction in entirely different processes of like volume.

Addresses of Periodicals

The Controller
2 Park Ave., New York 16, N. Y. Single copy. 60¢.

New York Certified Public Accountant
677 Fifth Ave., New York 22, N. Y., Single copy 50¢.

Harvard Business Review
Soldiers Field Station, Boston 63, Mass., Single copy $2.

THE CASE OF THE CORRUGATED BOXES

by Lyle M. Farmen

A responsibility which, I think, accountants are neglecting is that of developing a charge to suppliers for the costs incurred in handling faulty merchandise. This matter does not concern itself with merchandise rejected by the inspection department upon arrival but with merchandise which appears to be in good condition. We will touch here upon just one item of packaging material, corrugated boxes, but the same considerations apply to all items of packaging material and to some items of raw material.

Let us assume that a carload of corrugated boxes has passed the receiving inspection and is stored in the factory for use. When used, it is discovered that some, not all, of the boxes have blurred printing, or are too tight or too loose to hold the contents properly. With such a condition facing him, the manager or foreman has two alternatives:

1. He can return the entire lot to the supplier.
2. If the boxes are urgently needed, he can place an extra worker or two on the assembly line to sort out the faulty boxes or to adjust them when necessary.

In either case, the company has incurred expenses over the ordinary. The question then arises as to who should absorb these charges, the company or the supplier. I believe these costs should be borne by the supplier and should include the following:

1. Cost of unusable material.
2. Receiving labor incurred to store the material, plus the handling labor required to re-load the car if the merchandise is returned to the supplier.
3. Any special labor cost due to adding extra personnel on the production line to overcome the handicap caused by faulty merchandise.
4. Items of overhead directly connected with this payroll amount, such as social security taxes, unemployment insurance, and other fringe benefits.
5. In some instances, other items of overhead required to cover the foreman's time, machine down-time and shipment delays.

The invoice to the supplier for such charges should be accompanied by a letter from the purchasing department with a full explanation of the story behind the charges, to make the supplier aware of the costliness of handling subquality material.